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# A MANUAL

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CONTAINING THE GRADED COURSES OF STUDY FOR THE ELEMENTARY AND HIGH SCHOOLS OF WEST VIRGINIA : : : : : :

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STATE DEPARTMENT OF FREE SCHOOLS
M. P. SHAWKEY, STATE SUPERINTENDENT
1909

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CONTAINING

## THE GRADED COURSES OF STUDY

—FOR THE—

## ELEMENTARY AND HIGH SCHOOLS

—OF—

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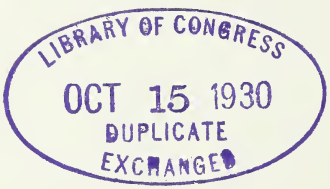
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# ELEMENTARY PROGRAM OF STUDIES.

## Introduction.

The Legislature of 1908 provided for the appointment of a State Board of Education, one of whose duties was to prepare and publish a program of studies for the elementary schools of West Virginia. In compliance with this provision of the legislature the program contained in this pamphlet is submitted for the guidance of the schools of the state.

While this program of studies has been prepared especially for the country schools of the state, yet it has been the aim throughout to make it broad and flexible enough to meet the demands of the larger village and town schools.

One of the problems of rural schools is to provide for learning and teaching in a school of all grades, one teacher, and a large list of subjects for study. To meet this situation this program will, in part, provide, by its time allotment of the different subjects, by its elimination of some of the less important parts of subjects, and by its attempt to aid in the proper correlation of subjects.

The time allotment economizes for the child and teacher in a number of subjects. Reading as a distinct subject is to finish by the end of the fifth grade or school year, geography as a separate subject is to be completed in the fourth, fifth, and sixth grades or years. Other subjects as history, civics, book-keeping, etc., are to be alternated by years.

The elimination is most prominent in arithmetic. Many topics usually taught in arithmetic are a waste of time. Much of factoring, compound numbers, involved common fractions, the applications of percentage, etc., should be omitted. Many topics in geography, history, and other subjects ought to receive very much less emphasis than they usually do, or be altogether omitted in school.

One of the largest time and energy savers in school is a reasonable correlation. Correlation not only economizes in time and energy but it contributes so largely to sound learning. There is much waste in teaching spelling as a distinct and separate subject. The

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child should learn to spell in connection with other subjects. In language and written composition and written work of all kinds the child should learn to spell. Only occasionally and with care should words be singled out, studied, and spelled in lists. When the child begins the systematic study of history then common school geography as a distinct subject should end, and it should be studied in the future in connection with history and other subjects. State history should not be taught as a distinct subject, but in connection with United States history, civics, and the geography of West Virginia. It is very doubtful whether civics should have a distinct place in the daily program. It can be taught more successfully in connection with other subjects. Book-keeping in the elementary schools should be taught in connection with arithmetic.

## OUTLINE OF STUDIES.

| | |
|---|---|
| First Year | Reading |
| | Language |
| | History and Literature |
| | Nature Study |
| | Writing |
| | Drawing |
| | Objective Number Work the last half of the year. |
| Second Year | Reading |
| | Language |
| | History and Literature |
| | Nature Study |
| | Writing |
| | Drawing |
| | Numbers |
| Third Year | Reading |
| | Language |
| | History and Literature |
| | Nature Study |
| | Writing |
| | Drawing |
| | Numbers |
| Fourth Year | Reading |
| | Language |
| | Geography |
| | Literature and History |
| | Arithmetic |
| | Nature Study |
| | Writing |
| | Spelling |

| | |
|---|---|
| Fifth Year | Reading |
| | Language |
| | Geography |
| | Literature and History |
| | Arithmetic. |
| | Nature Study |
| | Writing |
| | Spelling |
| Sixth Year | Literature |
| | History |
| | Language |
| | Arithmetic |
| | Nature Study |
| | Geography |
| | Writing |
| | Spelling |
| Seventh Year | Literature |
| | History |
| | Arithmetic |
| | Agriculture |
| | Language |
| | Spelling |
| | Writing |
| Eighth Year | Literature |
| | History |
| | Arithmetic |
| | Language and Grammar |
| | Civics |
| | Book-keeping |
| | Physiology and Hygiene |
| | Agriculture |
| | Writing |

## TYPE DAILY PROGRAM.

| Time. | Primary (1-3) | Intermediate (4-6) | Upper (7-8) |
|---|---|---|---|
| 9:00 | Opening exercises. | | |
| 9:10 | READING | Reading & Literature. | U. S. or Gen. Hist. |
| 9:40 | Language & Drawing. | READING & LITERATURE. | U. S. or Gen. Hist. |
| 10:20 | Language & Drawing. | Language. | U. S. OR GEN. HIST. |
| 10:35 | Recess. | Recess. | Recess. |
| 10:45 | LANGUAGE & DRAWING. | Language | Grammar & Lit. |
| 11:05 | Reading & Arith. | LANGUAGE. | Grammar & Lit. |
| 11:25 | Reading and Arith | Geography. | GRAMMAR & LIT. |
| 11:45 | READING & ARITH. | Geography. | Agriculture. |
| 12:00 | Noon. | Noon. | Noon. |
| 1:00 | History and Literature. | GEOGRAPHY. | Agriculture. |
| 1:20 | WRITING. | WRITING. | WRITING. |
| 1:30 | History & Literature. | Arithmetic. | AGRICULTURE. |
| 1:45 | HISTORY & LITERATURE. | Arithmetic. | Arithmetic. |
| 2:00 | Reading & Spelling. | ARITHMETIC. | Arithmetic. |
| 2:20 | Reading & Spelling. | Literature & History. | ARITHMETIC. |
| 2:35 | Recess. | Recess. | Recess. |
| 2:45 | READING & SPELLING. | Literature & History. | Civics or Book-keeping & Physiology. |
| 3:00 | Nature Study. | LITERATURE & HISTORY. | Civics or Book-keeping and Physiology. |
| 3:15 | Nature Study. | Nature Study. | CIVICS OR BOOK-KEEPING & PHYSIOLOGY. |
| 3:30 | NATURE STUDY. | NATURE STUDY. | Composition and Spelling. |
| 3:45 | Reading. | SPELLING & COMPOSITION. | COMPOSITION & SPELLING. |
| 4:00 | Dismissal. | | |

Subjects in small capitals indicate the recitation, the other subjects represent study periods.

The daily program of study and recitation will furnish some explanation to the outline of studies by years. The first, second and third grades or years are included under the primary division of the program: the fourth, fifth, and sixth, under the intermediate; and the seventh and eighth, under the upper.

The recitation periods in the daily program are distinguished from the study periods by being printed in small capitals. In the

daily program, where, in the primary division, the recitation in reading is indicated the three classes or grades in the primary classes recite in turn. In the same division where language and drawing appear, the language should come four times a week and the drawing once a week. However, there should be much free hand drawing in connection with other work during the day. In like manner, where two subjects appear at the same period on the program, the time should be divided according to the importance of the subject, the size of the classes, and the age of the pupils.

In the upper division United States history and general history should alternate by years. In like manner, civics should alternate with physiology and book-keeping, or book-keeping should be taught in connection with arithmetic. The daily progrom will require careful study, but no more profitable study of a school problem can be made by the teacher. The program will also need adjustment to individual school, as the size of the classes and the nature of the subjects pursued may require.

## CLASSIFICATION AND PROMOTION.

In classifying and promoting pupils these principles should be observed:

1. Age. Pupils who differ as much as three years in age should not be in the same class or grade. Some exceptions may be made in the intermediate and specially in the upper division.

2. Attainments. The attainments or knowledge and development of children in the same classes should be very nearly the same.

3. Capacity. The capacity of the pupil should be carefully watched by the teacher and its development should be provided for by proper advance in the subjects, by an increase in the complexity of the subject matter, and by arranging children of the same age, maturity and development of instincts in classes together.

4. Honest endeavor. The faithful and honest endeavor of the pupil should go far to determine the advancement in subjects and promotion of pupils. A pupil should not be unduly delayed in his promotion on account of his incapacity to attain to the standard of the more capable children.

5. Tests for promotion. No one subject should be taken as a test for promotion. A pupil may be in the third reader and still not be in the third grade; or a child may be in advance of or behind his grade in arithmetic, spelling, writing, or other subjects.

# COURSE OF STUDY.

## READING—FIRST YEAR.

### Texts—Primer and First Reader, Charts, Blackboard.

### Suggestions and General Directions.

No satisfactory progress in any branch can be obtained without the ability to read with understanding.

Reading is preeminently first among school branches and no one ever gets beyond its study whether in high school, college or university.

Better readers are needed in every profession, and especially are they needed in the pulpit. at the bar, and among teachers. How frequently the sacred scriptures are read in public apparently without any true appreciation of their meaning and sentiment; how lacking in right emphasis, proper phrasing, correct pronunciation, enunciation and articulation, pleasing delivery, and suitable emotion.

It is doubtful whether the 20th century surpasses in good reading the century of the Prophet Nehemiah and of Ezra, the priest, four hundred years before the Christian era began, when "They read in the book in the law of God distinctly, and gave the sense, and caused them to understand the reading."

The child learns through its activity. It is its nature to feel, to handle, to do, and therefore no child in a passive state or condition can learn or grow properly. So she teaches these little ones best who does it by plays, action words, and songs, calling for motor activity. Jack and Jill are impersonated by two of the children, the hill is represented by some short steps or incline, a pail of water is at hand, and while Jack and Jill go up the hill, a child recites the rhyme which the teacher puts in script upon the blackboard. Little Jackie Horner makes an interesting story for impersonation, so do The Three Bears, the Little Red Hen, Old Mother Hubbard, Jack and the Bean Stalk, Little Red Riding Hood, and for older than primer pupils, Hiawatha . These stories are told and written, reproduced and re-written until a vocabulary of more than one hundred words has been acquired by each beginner. One of the first things the beginner should develop is the ability to tell in good oral English the stories and fables that he hears.

Which should come first, thought-getting or word-learning? If

the child is to become a thought reader, knowledge getting must precede the memorizing of words. Before a child is permitted to read from the blackboard or from the printed page, he must have interpreted the thought fully and clearly. He should not be hurried into learning words and sentences at the expense of thought getting.

All reading matter should be interesting, should awaken thought, and, as far as possible, be of good literature.

## DIRECTIONS.

(a) Teach the sentence first, later teach by a combination of the word, sentence and phonic methods. When the child has obtained the thought lead him, train him, to express the thought and sentiment in clear, distinct tones, with proper emphasis and modulation, and in an easy, natural manner.

(b) Drills on elementary sounds, in articulation, enunciation and pronunciation, and in voice development will later be a daily necessity. The best time for these drills is probably the first few minutes of the recitation.

(c) The object of every lesson, in general, will be (1) the development of certain mental power—the power to observe, to think, to compare, to acquire, to recognize and remember; (2) the acquisition of knowledge; (3) readiness of utterance in good English; and (4) a pleasing manner, right habits, culture.

(d) Although cognizant of the fact that the child during his first year in school learns but little of school studies outside of the recitation, yet the teacher should give certain kinds of seat work, not merely to prevent idleness and mischief, but to train his eye and hand as in the making of boxes, envelopes and other objects, for the preservation of his own materials. He arranges pegs on a board to represent a square, a triangle and other well known figures; he measures the blackboard, the width of windows and doors, the height of his desk, the teacher's platform, etc.; he draws on the board certain of the things about which he is learning, then draws the same on paper.

(e) From construction and drawing it is an easy step to writing, and the first writing should be large, probably on the blackboard, in imitation of the teacher's copy. The primary teacher should seldom hear a lesson without using the blackboard.

Stories are told and retold until children can reproduce them

fairly well, the teacher aiding them by short sentences on the board.

Each day some new sentences of the story are written which the child readily learns on account of his interest in the story. Now, if the teacher can get a printing outfit, costing $1.25 to $1.50, and make charts which shall contain each sentence in print as it becomes known, the transition from script to print will be easy. Jingles and rhymes which the children have learned also go on these charts. A late authority in the teaching of reading says, "These rhymes must be kept before the children for reference, as they are learned one after another. To save blackboard room print them on charts within sight of the children." When a child comes to a word he does not know, the easy way for the teacher is to tell him the word; but this is not the right way. The child should find out the word, if he ever had it, from stories, rhymes or jingles containing it. He thus learns to depend upon himself, a habit of untold value.

(f) What a great accomplishment it is to be a good story teller.

Happy should that teacher be who has a selection of suitable stories for her grade, and the ability to tell them entertainingly. No primary teacher should fail to interest and to teach her children by stories. She may think it impossible for her to tell a story so as to hold her childrens' attention, but she must keep at it until she has acquired the art.

(g) In the reading lesson proper, every effort should be centered upon thought-getting and thought-expressing.

The watchful teacher permits no utterance until the child has obtained the sense and the proper emotion is felt, then the expression will be easy, natural, and forceful. Oral work should always precede the written. Train children to see a whole sentence at a glance, the teacher writing on the board, then quickly erasing; also by exposing hidden words and sentences only for a moment. If a sentence is incorrectly read the teacher should secure a right conception of the meaning by questions, then a re-reading of the sentence until that meaning is expressed. The short way but not the best would be for the teacher to read the sentence.

(h) Memorize only the best things. These selections should be taken not only from the readers but from books containing the best literature obtainable. In prose a few of our great orations,

or parts of them, may be committed to memory by pupils in grades four to eight, among which we would name Lincoln's "Gettysburg Address," the "Speech of Logan," the Mingo Chief; one of the short addresses or essays on "Education" by Macauley, Wendell Phillips, or John Ruskin; Edward Everett's "Dawn "; the closing paragraph of Webster's speech on "Liberty and Union"; and not least though last to be named are Bible selections such as the Twenty-third Psalm, One Hundred Nineteenth Psalm, and thirteenth chapter of First Corinthians.

In poetry there is a great abundance of suitable material for all and for almost all occasions The primary readers and juvenile story books will probably contain enough pieces to memorize in the first and second grades, then for the next three grades there are, besides the many good selections in the various readers, books of poetical selections alone, as "Graded Poetry Readers", "One Hundred Best American Poems", "Poems that Every Child Should Know". If the teacher desires a book of rhymes, also prose and poetical selections, with directions for reading, it may be found in "Essentials of Teaching Reading", by E. B. Sherman and A. B. Reed. Another valuable book for teachers of all grades is Charles A. McMurry's "Special Method in Primary Reading and Oral Work with Stories".

(i) In phonic work it is not very material whether consonant sounds or sounds of vowels be taken first. Go slowly but surely. Carefully observe the positions of the organs of speech in the correct utterance of the various elementary sounds and their combinations.

(j) Supplementary readers should be used much by both teacher and pupils; also in the higher grades, dictionaries and other reference books, which are given in a list at the end of this subject. These supplementary readers may be used as readers (1) to give a larger range of good literature: (2) to furnish information in geography, history, etc.; (3) for selections to commit or for drill; (4) to furnish material for Thanksgiving, Christmas and other special days.

### First Year— How to Teach.

Begin with talks about things with which the children are familiar, have them go through various forms of activity, as marching, arm calisthenics, quiet walking, singing motion songs,

etc. The purpose of all these is to put the children at ease, to lead them through bodily activity to oral expression. Now, there are many ways to begin; let us try sentences calling for action:—Mary, bring me a book. John, open the door. Elsie, hold up your right hand. Clara, bring me a pencil. Frank, shut the door. Howard, hold up your left hand, etc. These are all written on the board as the pupils perform the action. Later the teacher writes other sentences and the children, after reading them silently, do what the teacher writes, as hands up, hands down; Simon says thumbs up, thumbs down; Simon says stand; Simon says hands on head.

Or try the rhyme and jingle sentences:—Rain, rain go away, Rain, rain, go away, Boys and girls want to play, Come again some other day. Little Jack Horner sat in a corner, etc.

Or better still, have the children act the rhymes. Have a child to represent Jack Horner, have a girl and a boy in Pussy Cat, pussy-cat, where have you been? I've been to London to look at the Queen. Pussy-cat, pussy-cat, what did you there? I frightened a mouse under a chair.

Girl: Little boy blue, come blow your horn,
The sheep's in the meadow, the cow's in the corn.

2nd Girl: Where's the boy that looks after the sheep?
1st Girl: (Pointing to the boy). He is under the haystack, fast asleep.

2nd Girl: Will you wake him?
1st Girl: No. Not I,
For if I do, he'll be sure to cry.

Other rhymes for acting will be found in Little Red Hen, The Three Kittens, Black Sheep, Chicken Little, Silver Locks, The Boy and the Wolf, Rock-a-by Baby, and many motion songs. Perhaps some teachers can dramatize sufficiently for three tiny actions Wynken, Blynken and Nod or The Night Wind—(Have you ever heard the wind go 'Yoooo?), or Little Orphant Annie —(And the gobble-uns'll get you, Ef You Don't Watch Out-!)

If the teacher does not care to begin with sentences containing action words, or those with rhymes, she may interest and teach her children to read by or through the stories she tells them:—The Three Bears, Jack and the Bean Stalk, Hiawatha, Litle Red

Riding Hood, The House that Jack Built, Cock Robin, and The Old Woman and her Pig. Of course the teacher uses the blackboard for the leading sentences of her story, and makes use of all good pictures she finds.

Introduce phonics when the children know one hundred to one hundred and fifty words. Teach letter phonics and phonograms, such as, ight, ing, ail, ate, tion, and ite.

Phonics furnishes the main key to all new words in our language and should be taught as soon as the child has a fair vocabulary.

The work in phonics includes the sounds of letters, phonograms and words and the symbols for these sounds; the analysis of words into sounds; and the synthesis of sounds into words. In all phonic teaching the teacher must give the correct sounds for the children to hear and to imitate. Analysis of words into sounds may be deferred until the child has learned the sounds of the consonants, and the long and short vowel sounds. A phonic chart should be obtained or one be made by the teacher who follows some good reader. Not only the chart should be frequently used, but cards, 3 by 5 or 4 by 6, with phonograms, and other phonetic symbols may be used for drill.

## Writing.

All the writing by the primary teacher on the blackboard should be in large script letters.

It is better for children not to learn to print, but permit them to write in large hand on the blackboard and on paper some short copy given by the teacher. Have them with pencil and paper practice writing in concert, while the teacher counts, such words as me, men, mun, man, num, none, etc.

Correct position of the body, proper pen holding, and character and position of the paper should often be observed, and that which is best taught. All writing done by pupils in any grade should be their best.

It does not pay to make good writers in the lower grades and then through rapid, careless work permit them to come out of the upper grades writing miserable scrawls. The concert drill with counting should be an aid to correct movement. Let the drill *aim* to get, *and get*, good form to the words written, while the forearm moves with speed, or slowly, as the teacher counts.

What is said here applies to second year writing. Some teachers introduce pen, ink and copy books the last months of the second year, but these may be deferred until the third year.

## READING—SECOND YEAR.

*Texts*—Adopted Second Reader and Supplementary *Second Year* books.

The general directions for First Year should be carefully read. Let it not be overlooked that **thought getting** and **proper thought giving** are the vital points in second year reading. This involves the right pitch, tone, inflection, emphasis, feeling and correct pronunciation, articulation, and enunciation. While more attention will probably be paid to these latter things in the 4th to 8th grades ,yet they should not be neglected by any means, in the 2nd and 3rd grades.

During this year the children should do increasingly more reading and writing, reading from the blackboard, from their own readers and from supplementary books, as the teacher may direct, and doing much writing ,as compared with the first year, in reproduction stories, language work, and copy writing. See list of supplementary readers and reference books at the end of this course.

## READING—THIRD AND FOURTH YEARS.

**Text: Third and Fourth Readers and Supplementary Books.**

These are the years for memory work, hence close observation, and thinking are likely to be neglected. About the only way a teacher can determine whether the child has the thought is by his expression. Skillful questions may help him to see more clearly what the production means, and the dictionary prove an additional aid. If a child does not become a fair reader by the time he leaves the 4th grade the probability is that he will never be a good reader. These are busy years—phonic exercises and drills, sight reading, oral and written reproduction stories and descriptions of things read about, copying from the board and from books, verses for memorizing and reciting, all these in connection with his reading.

In writing use both practice paper and copy books. Drill to secure freedom of movement.

Teach the simple form of capitals ,and call attention to common mistakes in writing—mistakes in size, shape, slant, speed, smoothness, symmetry ,and style, mistakes in the seven S's.

It is during these years that boys and girls begin story books and read story papers, and if not directed and guided aright will get so full of wild west, Indian and Jesse James stories that there will be but little room for school studies. The teacher should obtain and read to her children stories of kindness, honesty, industry, fidelity, obedience, courage, etc.; also stories of beautiful lives, and biographies of good men and women. The school library should have many excellent books for the use of the pupils of these grades. If there is no library, start one, by donations and entertainments. Aesops Fables ,in large type; Babes of the Wood; Little Red Riding Hood; Grimm's Fairy Tales, book 1, also book 2; Story of Washington; of Columbus; of Lincoln; of Longfellow; of Nathan Hale and a hundred others may be obtained at five cents each; hence there is no good reason for a lack of good books.

Let the teacher read as many of these as possible so that he can recommend what to read to pupils of each grade. Take time when assigning reading lessons to call attention to difficulties, to new words. Tell how to study the lesson and to use the dictionary. A Young People's Reading Circle would, no doubt, do much good if properly organized and conducted.

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## READING—FIFTH AND SIXTH YEARS.

### Texts—Fourth and Supplementary Readers.

During the earlier years of school life, the child spends much time learning to read for the purpose, largely, of reading to learn. In later years he now does a great deal of silent reading and he should acquire the power and habit of rapidly gleaning from the printed page the thought which it contains. If, however, the pages of reading matter comprise his lesson as in history, physiology, or geography, the teacher should tell him, when the lesson is assigned, how and what to study. Let him take it paragraph by paragraph, not leave each until the facts it holds are known. Encourage pupils to read much aloud, at home and wherever convenient.

It is hardly possible to make a good reader out of one that reads but little; the great reader is usually the good reader.

But all oral reading should not cease nor if possible, be greatly diminished through the higher grades. Have readings in geography, in history, in literature, etc., in order that a proper comprehension and expression of a variety of subjects may be attained. So many students in high schools and colleges are poor readers that reading and speaking should be a part of every pupil's work throughout the eight grades.

The teacher must set the pace; he must read and re-read many of the best poems to them, commit them to memory himself and teach his pupils to enrich their minds by storing these poems up in memory.

**As is the teacher, so the school.** Reading is the key that opens the doors to the world's best treasures, that unfolds the panorama of the march of the heroes of all ages and that reveals the ideals in the pursuit of which men become great.

## SELECTIONS FOR MEMORIZING.

The Star Spangled Banner; Paul Revere's Ride; Lincoln's Gettysburg Address; Dr. Chas. H. Fowler's Eulogy of Abraham Lincoln (last three or four paragraphs): The Chambered Nautilus, by Oliver Wendell Holmes; Whittier's Barefoot Boy; and many short gems of beautiful literature.

## WRITING FOR 5th, 6th, 7th and 8th GRADES.

Now is the time to develop the forearm or muscular movement, without which no one ever becomes a smooth and rapid writer. All short letters should be made with the forearm movement. Upper and lower extended letters may be written by combining the finger and forearm movements. Practice upon oval exercises both direct and reversed. At every lesson apply movement to the making of certain copy words as mum, nun, mummery, memory, missionary, Mississippi, and fulfil. Drill also upon the simple capitals and see that they are made with the right movement.

Pupils are more likely to make rapid progress if the teacher is a good penman and an enthusiast on good writing. Insist that the pen must be held in a certain position to do the best work, and that the hand must slide along on the nails of the third and fourth fingers. During the last two years the correct form and writing of business and social letters, checks, notes ,drafts and other commercial forms should be efficiently taught.

## READING—SEVENTH AND EIGHTH YEARS.

### Texts—Fifth Reader and English and American Classics.

The Fifth Reader will probably be the text book for these years and in the reading of the selections found therein pupils should obtain a clear conception of what is meant by the mechanics of reading. Thought-getting is first in importance, but not all who quickly obtain the thought can easily and properly express it. The teacher must understand the mechanics of reading, and be able smoothly yet forcefully to express the meaning and feeling of the selections in this reader. She must have knowledge of the functions of Time, Grouping, Melody, Quality, Cadence, and Force.

She needs to know whether the selection should be read slowly or rapidly; what words are joined in groups; what words and phrases are emphatic; what inflections are proper; what force to give to certain passages and what quality of voice best suits the thought and sentiment. Good readers observe all these things although it may not be apparent to the listener. Not a little of the reading of pupils in the seventh and eighth grades should be in history and literature, especially in the latter.

In these grades we should have appreciative reading of the complete story of Hiawatha; Whittier's Snow Bound, McMurry's William Tell; Scott's Tales of a Grandfather; The Pied Piper of Hamelin; Horatius; Evangeline; the Ancient Mariner; and numerous other classics.

Tennyson's Bugle Song; Scott's Breathes There a Man With Soul so Dead; Whitman's O Captain, My Captain; Drifting, by Thomas Buchanan Reed; Bryant's To a Waterfowl; and Columbus, by Joaquin Miller.

The teacher should adapt this course to the time and needs of his school. There is probably more offered in this course than any teacher will be able to master and to teach the first year, but the second year should see him use much more of it. It is to guide not to enslave him. Let him read it again and again and each term use more and more of what seems best.

### General Suggestions.

The general purpose of language work is the establishment of a habit of clear, forceful and correct expression of thought. This involves the enrichment of the vocabulary, the correction of

bad habits in speech, and instruction in matters relating to form in written work. Since pupils write and talk during all parts of the day, language must be an all-day subject. In fact every recitation in every subject should be a language exercise.

"The special work of a language period is to establish rules in regard to oral and written speech, to give definite drill in the application of these rules, to afford opportunity for gaining high ideals of speech through contact with good models, and to give much practice in writing and speaking. But the work of the period cannot be made effective if the principles established and the rules set up are not observed during the rest of the day."

Freedom in expression unhampered by too much repression develops the spirit of frank and open discussion. A child dislikes formality, but naturally loves freedom.

All criticism should be constructive, suggestive, and helpful. If you would encourage effort, emphasize good points.

Cultivate good habits by the use of good models. Incorrect forms for criticism should rarely, if ever, be used in the lower grades.

Remember that much time and energy are wasted in trying to make children talk when they have nothing to say. No one can express himself clearly unless he sees and thinks clearly; hence, composition work should grow out of the experiences and the interests of the pupils.

It is desirable not only in the commercial world, but also in social relations, that every person have some special form of signature; and since the full name seems preferable, it is suggested that every pupil be encouraged from the beginning to write his name in full.

Much composition work, both oral and written, under careful and sympathetic supervision, is necessary, if pupils are ever to use good English.

### First Grade.

In the first grade the work of the first year should be in the form of oral English—conversation and oral reproduction—in which the pupils take the leading part.

In order that the child may acquire the habit of effective self-expression through language, he must think clearly; and to do this he must first have something worth while to think about. Language is the expression of thought and feeling. Hence if we

are to expect of the child ease, self-confidence, and fluency of expression, we must ask him to talk about something he sees, knows, feels, or has experienced and that he desires to tell to the other pupils or to the teacher.

**Conversation Lessons:** Subjects for conversation should be based upon the pupils' social and industrial experiences—their home, family and neighbors, pets, toys, games; the weather, season, falling leaves, preparation in home, school and stores for holidays; nature study, pictures, morals and manners, etc.

**Reproduction Exercises:** Myths, fairy stories, hero tales, stories of primitive life, and stories of life of today should be read, recited, or told to the pupils and they should be required to reproduce them in their own language. Before the pupil attempts to retell a story he should be able to select the proper events and arrange them in their right order.

The following fables and stories are suitable for work in this grade: Goldenrod and Aster, The Story of the Little Red Hen, The Fox and the Grapes, Old King Cole, The Dog and His Image, The First Thanksgiving Day, Little Boy Blue, The Fir Tree, The Story of the Three Bears, Pussy Willow's Hood, Cinderella, Stories of the Childhoood of Lincoln, Washington and Longfellow, The House That Jack Built, The Old Woman and Her Pig, Mother Goose Melodies, Tad and Polly, Indian Story of the Robin, Puss in Boots, etc.

"It causes, even in young pupils, an inner searching, a turning of the light of consciousness into mental corners to find ideas, words, and forms of utterance." Therefore, no criticism of their language should be made until timidity is overcome.

Beginning with about the sixth month simple written statements may be taught, introducing as the formal side of language the capital letter and the common forms of punctuation for the end of the sentence. For practice in the common uses of capital letters, period, and interrogation point, the pupils may be required to copy from the blackboard simple written statements concerning the work in other subjects. In this exercise emphasis should be placed upon accuracy and neatness rather than upon the amount of work done.

It is desirable that little children learn to love poetry; and to this end the teacher should read and re-read to the pupils story poems, emotional and inspirational poems, nature poems, and poems filled with the things of childhood.

As an aid to the cultivation of taste for poetry and good literature in general, it is suggested that the pupils of this grade be required to memorize and recite at least five poems to be selected from the following list: September—Helen Hunt Jackson. Goldenrod. October's Bright, Blue Weather. How the Leaves Came Down. Thanksgiving. Jack Frost. 'Twas the Night before Christmas. Little Fir Trees. The Snow Bird's Song. The First Snow. Pussy Willow. The Wind. A Laughing Chorus, April Shower. How the Little Kite Learned to Fly.

From the foregoing brief outline we see that the first step in teaching English in the elementary grades is to find out what the pupils know best, what they think most about, what stirs their feelings quickest.

The second step is to get the pupils to talk fluently and naturally; fluency should be sought even before correctness.

The third step is to introduce gradually the formal side of language, such as the common uses of capital letters, punctuation, etc.

Memory work should be introduced at the beginning of the first year and should extend throughout the entire course.

Many of the fables and poems mentiõntd in this course may be obtained in the "Penny Classics", published by Mr. C. M. Parker, Taylorville, Illinois. Also, Nature in Verse, published by D. C. Heath & Co., contains many poems suitable for study and memory work.

## Second Grade.

In the second grade the work in language includes (a) composition—conversation and oral reproduction, (b) copying selections, (c) drill on certain oral and written forms, (d) memorizing selections from literature.

**Conversation lessons.** Subjects for conversation should be based upon the pupil's observations, experience and knowledge. The aim should be to secure natural and free expressions of thought and feeling. The interest and efforts of the pupils should not be checked by criticisms and too great a desire for accuracy. The work should be so directed as to maintain the interest of the pupils, and at the same time lead them into the habit of using correctly words and expressions which are liable to be used incorrectly in conversation outside of the schoolroom.

Do not forget that the highest ideals of speech are gained through good models.

**Oral reproduction.** Stories and simple descriptions should be read, recited, or told to the pupils and they should be required to retell them in language appropriate to childhood. By means of skillful questioning the teacher can help the pupil to select the most interesting incidents in a story or a description, and to arrange them in logical order. If this method be pursued intelligently, it will facilitate in the development of the story and will enable the student to grasp it more easily as a whole.

**Copying selections.** For practice in capitalization, punctuation, and spelling, the pupils should be required to copy selections from the readers, blackboard, etc.

Correct common errors of speech and continue to drill on the correct forms liable to be used incorrectly.

Extend the drill to include capitals: (a) first word of every sentence; (b) first word of every line of poetry; (c) names of persons, places, days, months, and seasons, words I and O.

Punctuation: (a) period at the end of each direct sentence; (b) interrogation point at the end of a sentence asking a question.

Give attention to some of the common abbreviations met with in the other work of the school.

**Memorizing.** The pupils in this grade should memorize five or six of the poems noted below, and such other matter from standard authors as time will permit. In selecting this additional material, the interests and experiences of the children should be kept in mind.

My Shadow; Wynken, Blynken and Nod; Friends; Christmas Carol; Wintertime; Lady Moon; March; Song of the Lilies; Robert of Lincoln; Daffodils; The Wind and the Moon.

Most of the poems mentioned in the foregoing list may be found in Treetop and Meadow, published by the Public School Publishing Company.

### Third Grade.

The language work of the third grade includes (a) conversation exercises, (b) sentence and paragraph construction, (c) reproduction exercises, (d) writing from memory or dictation, (e) drill on certain oral and written forms, (f) memorizing selections from literature.

**Conversation lessons.** Conversation exercises should be based upon the pupil's observation, experience, and reading. Since the content of language is thought and feeling, the teacher should strive to clear up the pupil's fund of facts, ideas, and images, and make them more full and varied. If the pupil is to gain confidence and fluency, the teacher must stimulate and direct the growth of his mind and develop his language power through the work presented to him in his studies.

In written composition the special work of the year is the sentence and the proper sequence of sentences in writing stories and descriptions. It is not easy for young pupils to determine where one sentence ends and another begins, nor to arrange their thoughts in logical or natural order when they are writing. Therefore, before asking pupils to reproduce a story or a description in writing the teacher should see to it that the material is well organized and arranged. When the pupil is arranging in logical order the parts of a story, or his fund of facts upon a definite subject, he is taking the first steps in paragraphing.

**Oral reproduction.** Continue the reproduction of stories and descriptions, begun in the first and second years.

Exercises in forms noted in the first and second years should be continued. There should be additional drill on:

Capitals: (a) How to write dates; (b) how to write persons' full names; (c) how to write initials of a person's name; (d) titles when applied to persons; (e) terms of the deity; (f) adjectives derived from proper nouns; (g) important words in capitals; (h) first word of a direct quotation.

Punctuation: (a) Quotation and exclamation marks; (b) period with all abbreviations; (c) singular possessive forms; (d) contractions.

Drill on: (a) abbreviations; (b) regular plurals; (c) words and forms liable to be misused, such as seen for saw, went for gone, etc.; (d) words alike in sound but different in meaning, such as ate and eight; see and sea; their and there; to, two, and too; would and wood; right and write; sent, cent, and scent; by and buy, and many others; (e) the correct use of pronouns, such as I, me; he, him; she, her; they, them; etc.; (f) the use of demonstratives, and the use of that, whose, which, in forming complex sentences; (g) simple letter forms.

**Memorizing.** Complete poems of literary merit, such as the following, should be memorized: The Corn Song; The Kitten

and the Fallen Leaves; Thanksgiving Song; Our Flag; The Children's Hour; selections from Hiawatha's Childhood; Planting of the Apple Tree; The Brook.

### Fourth Grade.

In the fourth grade the language work should include (a) reproduction exercises; (b) model compositions studied and imitated; (c) paragraphs and stanzas from memory and dictation; (d) drill on certain oral and written forms; (e) simple rules of good usage; (f) memorizing selections from literature.

**Reproduction Exercises.** The work in oral and written reproduction should be extended to include narratives, descriptions, and simple expositions. The material in these various forms of discourse should be well arranged and organized before the pupil is asked to reproduce them.

In written work teach the pupil how to write his reproduction so the reader may easily see the beginning of each new topic—indenting the pargraph. Also, an effort should be made to secure longer sentences by combining two or more short ones by the use of who, which, while, where, etc. Throughout the year paragraphing and sentence formation should receive special attention.

Dictation of paragraphs and stanzas should be given frequently. In this work as well as in all written work insist upon neat and orderly arrangement of material.

Extend the exercises in the use of capitals.

Extend drill on punctuation to include comma (a) after yes, and no, if followed by a sentence; (b) in direct address; (c) preceding a direct quotation; (d) in parts of a letter; (e) after words in series.

Drill on: (a) regular noun plurals; much used possessive plurals. (b) the correct use of who, whom, whose; teach, learn; got, and have got; lie. lay; sit, set; rise, raise. (c) letter forms.

In dealing with ungrammatical and incorrect forms attention should be fixed upon the forms which the pupil uses spontaneously in his conversation and recitations rather than upon a collection of examples which the pupil might never see but for their introduction into the language lesson. In dealing with these forms a few simple rules may be introduced. If these rules are stated and referred to frequently, the students will learn them almost unconsciously.

Memorize several selections from good literature, such as the following: Ballad of the Tempest; Robin Redbreast; The Mountain and the Squirrel; The Sparrow; Selections from Snow Bound; Our Heroes; The Pied Piper of Hamelin; Sandpiper.

### Fifth Grade.

In the fifth grade the work in language should include (a) oral and written reproductions of narrations, descriptions, simple expositions, etc., (b) simple oral and written compositions, (c) paragraphing, (d) drill on correct oral and written forms, (e) study of simple declarative sentences; subject, predicate, and simple modifiers distinguished. (f) memorizing selections from prose and poetry.

**Reproduction exercises.** In the fifth grade the material for reproduction should be in larger units and be reproduced more in detail than in the preceding grades. See that the pupils talk to the point, and when they have discussed one topic of their subject, note the transition to the next topic. Encourage the use of longer sentences, involving the use of who, because, and other clause words.

**Composition.** As much attention should be given to oral language as to written composition. History, geography, and literature will furnish material for practice in oral composition, and every recitation in these subjects may also be made a language exercise.

At least once a week there should be an exercise in written composition other than dictation. Subjects for composition should be based upon the experiences and interests of the pupils. In written compositions, as in oral speech, many points of form must be corrected at once; but some one or more questions should be given special consideration each month. Good models, kindly suggestions, and careful supervision should be relied upon for good results.

To exercise the imagination, have the pupils complete an unfinished story, take an imaginary journey, write an autobiography of some familiar object, or interpret a picture. These compositions should be read and discussed in class, and then rewritten.

In all composition work paragraphing and sentence structure should receive special attention.

Dictation exercises should be frequent, and should have a distinct purpose, such as teaching the use of commas, capitals, divided quotations, possessives, contractions, homonyms, longer sentence forms, paragraphs, correct letter forms, etc.

Continue the exercises in punctuation, capitalization, abbreviations, homonyms, and words often misused.

Drill on: (a) the sign of possessives with nouns and pronouns.

(b) the formation of plurals of nouns and pronouns.

(c) case forms of common pronouns, such as I, we, he, who.

(d) simple forms of common irregular verbs—see, saw, seen.

(e) forms of familiar letters, notes, invitations, etc.

Watch the pupil's oral and written language to discover the necessity for drill on forms not heretofore mentioned.

Do not fail to substitute the correct form when the pupils use vulgarisms in their oral and written work.

Begin the study of simple declarative sentences, including the subject and predicate, the limiting elements and their position. It is necessary for the pupil to grasp the two main elements of a sentence. He should know that every sentence has these two elements, and that they form a general statement, the germ of thought, the basis of the sentence. To make the pupils understand the importance of these two elements is an essential step.

Rules of good usage based upon the year's work should be learned and applied by the pupils.

Continue to memorize selections from both prose and poetry. Pupils should be encouraged to get the thought and meaning from the selections memorized.

The following selections are recommended for memorizing: The Village Blacksmith; My Native Land; Christmas Everywhere; Abou Ben Adhem; Down to Sleep; The Throttle; Psalm of Life; November; Wreck of the Hesperus; The Landing of the Pilgrim Fathers.

### Sixth Grade.

In the sixth grade the work in language should include (a) oral and written reproduction of narrations, descriptions, and simple exposition, (b) oral and written composition, (c) study of the paragraph, (d) drill on oral and written forms, (e) classification of sentences, (f) analysis and synthesis of sentences, (g) study of phrases and clauses, (h) memorizing selections from prose and poetry.

**Reproduction exercises.** Continue the work in oral and written reproductions. Since the object of the reproduction is to present the ideal in form which the pupil unconsciously imitates, the best possible material should be selected for the purpose. Before the pupil is asked to present reproductions an outline should be made. This will aid the pupil in getting the thought as a whole and in its parts, and will serve as the basis for paragraphing.

**Composition.** The composition work should be continued as in the preceding grade, with greater emphasis on accuracy and form.

Much attention should be given to oral English. Make a list of common errors, and drill upon the correct forms throughout the year. In all oral work train the pupils to talk to the point. Looseness and vagueness should be discouraged.

In written composition work the following points should be emphasized; proper use of capital letters, spelling, punctuation, paragraphing, correct use of words, correct form of sentence, logical arrangement of matter, division of words at the end of a line, etc. Do not call for long compositions. Quality and not quantity should be the rule in all written composition work. Better two paragraphs well written than many paragraphs full of errors.

Pupils in this grade should study the paragraph in connection with good models from literature. Frequent exercises in writing paragraphs upon familiar topics should be given.

Drill constantly on correct oral and written forms which are violated by the pupils.

Drill on: (a) social and business correspondence. Review familiar letter forms, notes of invitation and answers.

(b) the plurals of compound nouns, the possessive of compound nouns, formation of irregular plurals.

(c) the comparison of adjectives and adverbs.

Review the study of the sentence,—subject, predicate, and their modifiers. Sentences should be classified according to their form and use. Study phrases and clauses; also, some attention should be given to the analysis and synthesis of the simple sentence. Study the parts of speech as elements of the sentence.

Give systematic instruction in the use of the dictionary for spelling, definitions, and pronunciation.

The following poems are suggested for memory work: The

Death of the Flowers; In School Days; Nobility; Christmas Tide; Passages from Snow Bound; Concord Hymn; the Voice of Spring.

### Seventh Grade.

In the seventh grade the work in language should include (a) a study of specimens of narration, description, and exposition, selected from literature, (b) oral and written composition, (c) social and business correspondence, (d) reports on home reading, (e) drill on oral and written forms, (f) grammar with textbook, (g) memorizing selections from prose and poetry.

Narrations, descriptions, and expositions should be studied with reference to the thought expressed, and as specimens of model compositions. Therefore, only the best material should be selected for the purpose.

In oral composition the aim should be to train the pupils to express themselves clearly, correctly, and connectedly, in easy conversational style. Since the best means of cultivating good habits is by the use of good models, the teacher should be careful of his own manner of expression.

Give constant attention to oral and written forms which are violated by the pupils.

Drill on social and business correspondence, giving attention to folding, superscription, etc.

Grammar. Technical grammar with the textbook. Follow the course as outlined in the text. "Do not fill the pupil's minds with mere words. Grammar calls for a vigorous exercise of the logical powers—analysis, comparison, abstraction, generalization, and inferences. Grammatical construction in this year should deal as far as possible with the simplest and plainest things and the pupils should be required to think and to reason. The facts and rules that are studied and learned should be constantly and unfailingly applied by the teacher to the ordinary speech used by the pupil."

Continue to memorize selections from prose and poetry.

### Eighth Grade.

The language work in the eighth grade should include (a) oral and written descriptions, narrations, characterizations, and expositions, (b) drill on correct oral and written forms, (c)

grammar with textbook, (d) memorizing selections from prose and poetry.

Have the pupils study model specimens of narration, description, and exposition with a view of imitating each.

Drill on oral and written forms which are violated by the students.

Grammar. Following the suggestions for teachers on the same subjects, seventh grade, complete the textbook in use. Conclude the work of the year with a review, summarizing the essential facts.

Memorize selections from prose and poetry.

The following books are recommended for reference and study:

Talks on Writing English—Bates.

Teaching of English—Chubb.

Correct Composition—De Vine.

Dr. Waitman Barbe's Famous Poems Explained, published by Hinds & Noble, New York, contains many excellent poems suitable for memorizing.

## NUMBER WORK AND ARITHMETIC.

The course of study in Arithmetic sets forth the minimum requirements in each year. The teacher is not expected to conform rigidly to this outline; wherever it is possible to complete the work here laid down, and in addition to take the simpler forms of the succeeding grade, the teacher is at liberty to do so. But no new work should be attempted until the work laid down is thoroughly done.

In teaching linear, square, and cubic measurements, first present a distinct unit for each table; for example, in teaching linear measure, the linear inch or foot may be taken as the unit. In teaching square measure, if the square inch is adopted as the unit, show that a surface three inches wide and five inches long, for example, will contain three rows of units, each row consisting of five units, or fifteen units in all. Similarly in cubic measure.

### Work of Lower Grades.

The chief object in teaching numbers in the first three years is to render mechanical processes automatic. The teaching should be of such a character that the child is able to add, sub-

tract, multiply and divide with rapidity and accuracy, and without conscious effort. Before a child can be said to have mastered the multiplication table he must be able to give results quickly, and to work under pressure. Perfect work in combination of numbers is of little value unless the time in which the work is given is limited.

In solving a problem the case is different, for it requires time to reason it out. It is a mistake to give too many problems to be solved at one lesson. Three or four of different kinds will better cultivate the power of thought than a dozen of similar forms. The form and wording of problems should be varied as much as possible.

### Second Half First Year.

1. Object lessons in numbers.
2. Notation and numeration to 100.
3. Fundamental operations,—addition, subtraction, multiplication, and division of numbers to 12.

Illustrate each step by using objects,—marbles, pencils, pebbles, etc. At each step oral and written methods should go hand in hand. If a pupil fails to understand a problem, the best method is to give him a similar mental problem, involving the same principles with smaller numbers and simpler conditions. In learning to 12—

1. The recognition of groups of objects,—twos, threes, fours, fives.
2. Counting to 12, both with objects and without objects.
3. Making figures to 12.
4. Combinations to 12 with objects.
5. Combinations to 12 without objects.

Dispense with the use of objects as soon as the combination is learned.

No time can be set for omitting objects.

Seek to secure accuracy, rapidity, and neatness from the outset. Do a little every day.

Parts of numbers—Teach ½ by division of objects.

Measures—Recognize coins to one dollar. Number of cents in nickel and dime; Number of inches in foot; feet in a yard; pints in a quart; quarts in a gallon.

Time—Teach children to tell time by the clock. This involves

Roman numerals to XII. Also teach number of minutes in an hour; hours in a day; days in a week, with names of days in a week.

Problems—Problems in buying and selling; making change to 25c.

Train to quick and accurate seeing, hearing, and handling. The exercises should be short and pleasing. Use much oral work.

**Second Year.**

1. Read and write numbers to 1000. By illustration with objects show relation of units to tens, and tens to hundreds.

2. Combination of numbers,—addition, subtraction, multiplication, and division to 50.

3. Written addition and subtraction of small numbers, as

15 minus 8 equals 7
9 plus 7 equals 16

4. Written addition and subtraction of columns of numbers without "carrying", as

| Add | | Subtract | |
|---|---|---|---|
| | 25 | | 36 |
| | 13 | | 14 |
| | 11 | | — |
| | — | | 22 |
| | 49 | | |

5. Written addition and subtraction of columns of numbers in which tens are "carried", as

| Add | | Subtract | |
|---|---|---|---|
| | 25 | | 33 |
| | 18 | | 18 |
| | — | | — |
| | 43 | | 15 |

Illustrate first operations by use of objects.

6. Use measures and time given in first year, and also give number of weeks in a month; days and months in a year; ounces in a pound; pecks in a bushel.

7. Parts of numbers—1-2, 1-3, 1-4, 1-5 of 2, 4, 6, 8, 10, etc.

Cut up objects to show these parts, and show also by objects that 1-2 equals 2-4; 1-3 equals 2-6; 1-2 equals 3-6, etc.

8. Read and write Roman Numerals to L.

9. Problems — Give mental problems illustrating above named principles.

## Third Year.

1. Reading and writing numbers to 10,000. Roman numerals to C. The work of the second year should be extended and expanded. See that children understand the relation of units to tens, tens to hundreds, hundreds to thousands. Give frequent dictation of numbers to be written by the children.

2. Complete multiplication table. Continue combinations of numbers.

3. Teach addition and subtraction by endings, as:

| | | | |
|---|---|---|---|
| 9 | 19 | 39 | 79 |
| 3 | 3 | 3 | 3 |
| — | — | — | — |
| 12 | 22 | 42 | 82 |

4. Teach addition by grouping numbers that make ten; as:

17 } 10
33 }
25

46 } 10
34 }

This greatly increases rapidity in adding.

19 } 10
31 }

5. Compound numbers as in second year, with the addition of nickel, dime, quarter, half-dollar, and dollar. Give examples in making change and in measuring dimensions, of desk, tablet, room, etc.

6. Parts of numbers—Continue work of 2nd year, using more than one part of a number, as 2-3 of 12; 3-5 of 10. Also 3 is 1-3 of what? 5 is 1-2 of what? Etc.

7. Mental problems (easy) involving these principles.

8. Written work—Written addition and subtraction of numbers of several figures.

Written multiplication of numbers in which the multiplicand contains more than one figure, and the multiplier one figure only.

Written division in which the divisor is one figure and the dividend contains more than one figure.

After these processes are performed with ease use multipliers and divisors of two figures.

Written problems involving addition, subtraction, multiplica-

tion, and division. At first these problems should involve only one step.

### Fourth Year.

Mechanical Work—In this year mechanical work in reading and writing numbers, addition, subtraction, multiplication, and division should be perfected. As all subsequent mathematical work is but an amplification of these principles nothing further can be accomplished until their exercise becomes automatic. The work of this grade is more than a review of the preceding year. in the third year the theory of written arithmetic should be presented, with only simple applications. A child may **know how** to add or to multiply and yet be unable to do it with ease and accuracy. To give him this power is the object of the work in this grade.

Oral Work—Rapid work in combinations, in oral addition, adding by tens, and in reading numbers. Review addition by tens, as in third year.

Compound Numbers—Review work of third year, and teach cwt. and ton; pint, quart, peck, and bu. (dry measure); number of feet in a mile; days in month and year;

Parts of numbers—1-2, 1-3, 1-4, 1-5, etc., of 16, 24, 20, etc.
2-3, 4-5, 3-7, etc., of 18, 20, 35, etc.
6 is 1-3 of what? 8 is 1-5 of what?
2 in what part of 4? 5 is what part of 30?
8 is 2-3 of what? 9 is 3-4 of what?

Give easy exercises in changing denominator of fractions and in adding fractions. Use objects to illustrate.

Averages—Show how to find averages in connection with teaching division. Calculate average age of school, average temperature for month, average grade received in lessons, etc.

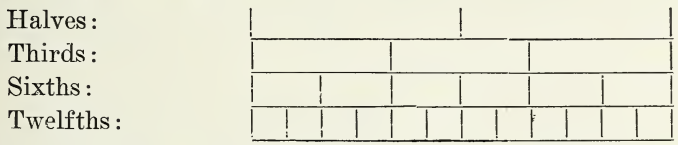
Written problems involving principles stated above should be given. These problems should be made gradually more difficult, and involve several steps. Children's solutions should be logically arranged and should show essential points, while avoiding superfluous matter. Mental problems involving parts of numbers, measures, etc., should be given out by the teacher, mentally solved by the pupils, and the results given either orally or in writing.

### Fifth Year.

At the beginning of this year pupils should take up a complete text-book in arithmetic.

Mechanical Work—Practice in mechanical work should be continued. Teach parts of numbers, as in fourth year, with the addition of one number given to find what part of it is of another, as: 8 is what part of 12? 15 is what part of 25?

Fractions—Teach meaning of numerator and denominator. Illustrate with objects cut into parts. The following diagram will show how the denominator may be changed, while the value of fraction remains the same:




TEACH: Change 1-2 to fourths, 1-3 to sixths, 2-5 to tenths, 1-3 to tenths, 1-5 to halves.

FACTORING, Etc.—Find prime factors of numbers to 50. Factor numbers to 50 at sight. Find G. C. D. and L. C. M. of numbers by factoring. After this is thoroughly understood other methods of finding G. C. D. and L. C. M. may be taught. Teach cancellation by use of factors.

Compound Numbers—In addition to tables given in previous years teach the other common tables given in the text-book, with the exception of cubic measure and longitude and time. Teach reduction, both ascending and descending; addition, subtraction, multiplication, and division of compound numbers.

In all problems prevailing prices should be given in computing cost. Teachers should find out such prices. Units of linear and square measure should be marked off on the blackboard or floor of the school room, as yard and rod on the floor; square foot divided into square inches on the blackboard.

Business Forms—Teach correct forms of bills, receipts, checks, etc.

Teach short forms of division and multiplication; aliquot parts of 100, etc. E. g., 360 x 16 2-3 is the same as 360 x 100 and divided by 6, because 16 2-3 is 1-6 of 100.

Give written and mental problems involving all principles given above.

## Sixth Year.

Review work of fifth year, including square measures and its

applications. Complete the subject of common fractions as given in text book.

Cubic Measure—Teach cubic foot as unit of measure. Show by objects that it is made up of cubic inches. In ascertaining cubical contents of a room, for example, lead pupils to imagine the floor covered with a layer of these cubical units. If the room is nine feet high show that there will be nine layers. Give practical examples of square and cubic measurements, such as problems in plastering, papering, excavating, stone cutting, etc., at prevailing rates. Teach number cu. in. in a gallon and in a bushel, and compute capacity of various measures.

Parts of numbers—Review and continue. (See below.)

Decimal Fractions—Show relation between common and decimal fractions, and change from one form to another. Reading and writing decimals; addition, subtraction, multiplication, and division of decimals.

Parts of Numbers—8 is 1-3 more than what? 8 is 1-3 less than what? 15 is 2-3 greater than what? 16 is 3-5 less than what? One number given as a certain part greater or less than another number to find the unknown number.

Mental problems should increase in difficulty. Solutions should be written out at least once a week.

## Seventh Year.

Review and amplify the work in common and decimal fractions and compound numbers. All the remaining subjects treated in the text book should be taken up in their simpler forms, while difficult and complex forms should be avoided.

Percentage—In presenting this subject emphasize the fact that percentage is only one aspect of fractions; that is, a given percentage of a number merely means so many hundredths of that number. In percentage the denominator is always 100, so that all cases of percentage may be reduced to cases in parts of numbers. As pupils have already been taught parts of numbers percentage should not be difficult for them. The parallel may be seen by the following:

(1) 1-4 of 20 is what? 25% of 20 is what? (B. & R. to find P.)

(2) 20 is 1-4 of what? 20 is 25% of what? (R. & P. to find B.)

(3) 6 is what part of 18? 6 is what % of 18? (B. & P. to find R.)

4. 40 is 1-4 more than what? 40 is 25% more than what? (R. and sum or difference of B. & P. to find B.)

Since much of the succeeding work turns on percentage there should be a clear understanding of all these cases.

Longitude and Time—In teaching this subject the rotation of the earth, with the direction of rotation must be made clear by use of globe.

Application of Percentage—Trade Discount, Commissions, Profit & Loss.

Percentage with Time—Simple Interest, Bank Discount, Insurance, Simple Ratio, Simple Proportion, Taxes.

Mensuration—Teach measurement of plane figures, and prism, cube, and cylinder. Use objects freely for illustration.

## Eighth Year.

The work of this year is a general survey of the subject of arithmetic, with attention to more difficult forms not previously taken up. Begin with a rapid review of reading and writing numbers, and the fundamental operations. Take up in order all the subjects treated in preceding years, adjusting the time given to each subject in such a manner that ample time may be given to the completion of the subjects not already studied.

Brokerage, Stocks and Bonds, Compound Interest, Partial Payments, Average, Measurement of cone, sphere, and pyramid, together with such other measurements as have already been studied, should be treated in this grade. The work of this school year should result in a reasonable understanding by the average pupil of all important arithmetical processes.

## Parts of Numbers.

The following scheme has been given in parts in the various grades in the preceding course of study, but is here given in complete form. As this is the foundation of all work in percentage the parts of numbers should be thoroughly understood.

1. To find any part of a number:

   What is $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$ $\frac{1}{5}$, &c. of 2, 6, 8, 10, &c.?

   What is $\frac{2}{3}$, $\frac{2}{4}$, $\frac{2}{5}$, $\frac{3}{4}$, &c. of 6, 10, 12, &c.?

2. A part of a number given to find the number:

   2, 3, 4, 5, &c. is $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, &c. of what number?

   2, 3, 10, 12, &c. is $\frac{2}{3}$, $\frac{3}{5}$, $\frac{5}{7}$, &c. of what number?

3. To find what part one number is of another number:

   2, 3, 4, 5, &c. is what part of 4, 6, 8, 10, &c.?

   2, 3, 5, 8, &c. is what part of 5, 8, 12, &c.?

4. To find a number that is a certain part greater or smaller than another number:

   What number is $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, &c. greater or smaller than 6, 8, 10, &c.?

   What number is $\frac{2}{3}$, $\frac{3}{5}$, $\frac{4}{7}$, &c. greater or smaller than 6, 10, 28, &c.?

5. A number given as a certain part greater or smaller than some number to find it:

   10, 12, &c. is $\frac{1}{4}$, $\frac{1}{5}$, &c. greater or smaller than what number?

   10, 12, &c. is $\frac{2}{4}$, $\frac{3}{5}$, greater or smaller than what number?

## HOME GEOGRAPHY.—Fourth Year.

A necessary preparation for this study is the nature work through the preceding grades, and, in fact, not a little nature study and geography work may be commingled in the fourth and fifth years.

The purpose of this year's work in geography is (a) to teach by observation the facts and phenomena of the world immediately around the child, and to learn the "how" and "why" of his environment. (b) To learn direction and distance of important buildings and places in his neighborhood, if he lives in the country, otherwise in the town or city, such as schools, churches, mills, mines, quarries, factories, roads, railroads, rivers. (c) To learn and tell all about fruits, grains, trees, people, industries, what things are sold, what are bought and where they come from; how things sold and bought are shipped; how the people are governed, how money is raised to pay expenses of government; to learn about weather and to keep records of temperature, winds, rainfall, sunny and cloudy days.

The report of the Committee of Ten contains these words: "Observation should go before all other forms of geographical study and prepare the way for them; its object being (1) to develop the power and the habit of geographic observation, (2) to give the pupils true and vivid basal ideas, and (3) to arouse the spirit of inquiry and thirst for geographical knowledge."

Another committee says that the natural order for children to pursue in the study of geography is:—

(1) "Field work, or observation of natural phenomena about the home and the school house, together with study of pictures. (Recitations oral). (2) More field work, with reading and writing about the objects observed, or about similar objects.

(3.) Careful study, with use of comparison and reasoning to arrive at geographical truths; more reading, longer excursions, followed by illustrated written work."

In order to know about the world abroad, children must first know from observation the world at home. Pictures will prove a valuable aid to the child's imagination, and this is why the modern geographies are so full of them.

**Directions**:—There should be a regular time for recitation, but excursions may be made whenever material is needed. However, the teacher should go over the route before the class goes out and

determine what he would have particularly observed. The textbook should not be introduced before the middle of the year, and then, if it be a late series, the book may be used both for reading and study. When a lesson has been read the pupils with closed books should tell in their own language what they have read, describe the pictures, draw maps (crude ones at first they may be), and locate the places named. A moulding board dissected maps, products of other states and countries, such as coal, granite, marble, cotton, hemp, specimens of wood, iron ore, copper, aluminum, silver, etc., are useful at times. Have a weather map on the blackboard with dates and columns headed by wind, rain, clear or cloudy sky, dew or frost, snow, length of day, moon, temperature, remarks, on which the teacher for a few days will make the proper entries then assign the work each day to different pupils. This weather map of itself and in comparison with the Weather Bureau maps will afford much discussion and information for the advanced geography class.

## GEOGRAPHY—Fifth and Sixth Years.

The elementary geography of a two-books series should be completed the fifth year and one-half of the larger or advanced geography during the sixth year.

The work of the fifth year will be topical and any good elementary geography may be used. The first month will be devoted to (a) the making and reading of geographic maps; (b) the use of a globe to represent the earth and the countries of the earth. Let the teacher show the relative positions of the several continents and the oceans between them. Call attention to the circles on the globe, but stop short of telling what they can find out for themselves. Use a large map of the world.

The second month the class studies North and South America as follows:

(1) Location on the globe and world map, shape and size, coast features and large islands.

(2) Surface—Mountains, highlands, lowlands, and drainage basins.

(3) Climate—hot belt, temperate belt, cold belt, rainfall, prevailing winds.

(4) Life—Forests, grassy plains, deserts, and the peoples, animals, both wild and domestic.

(5) Industry and Commerce—Chief productions, (wheat, corn, fruits, coal, oil) routes of commerce, great cities. Have readings from geographical readers frequently.

For the third month the study will be upon Europe and Asia. As in the second month the five topics of location, surface, climate, life and industries will be applied to Europe and Asia. Some of the important things about Europe to be brought out are —form, size as compared with U. S., large islands, mountains, direction of winds, warm ocean current, rainfall, plains, forests, peoples, a dozen great cities, warm winds, balmy Italy.

Study Asia as to size, shape and area; hot, temperate and cold regions; mountain peaks and ranges; great northern plain; high central plateau; four great seas; many large islands; regions of scant rain and of much rain—causes; the great deserts; the forests and wild animals; the people—Hindus, Chinese, Japanese, Arabs, Russian.

Study Africa, Australia and the adjacent islands during the fourth month in the same manner as Europe and Asia were studied. Compare the smooth and regular coast lines of these countries with that of Europe, and tell what are the results. Note the great deserts in both countries, the islands—Tasmania, Borneo, Java, New Zealand, and the Philippines; a few cities, and a few products.

The course for the fifth month will begin at home in the children's town or neighborhood and county and continue for one week or five lessons. Find out everything possible about the home neighborhood and county—government, officers, schools, churches, railroads, products, drainage, elevation, districts, early settlers, name of county—why named, size, population, and last get or make a county map to keep always before the school.

Then pass to the study of West Virginia for three weeks, making it as thorough and as intensive as was the study of the county.

The sixth month will be devoted to a study of the great central plain comprising the valleys of the Mississippi, Saskatchewan and the St. Lawrence. This is land of vast grain production. Note that in the West, the rainfall is scant, not exceeding 20 inches annually, while the average for remainder of the plain is not far from 40 inches.

For the seventh month we take all that portion of the United States west of the Mississippi Valley, which includes the great

plateau region 5,000 feet above sea level, and the three Pacific coast countries, Washington, Oregon and California.

What variety and interest we find here: deserts changed into gardens by irrigation; rivers turned from their channels through mountains to water other valleys; famous mountain peaks; three mountain chains; forest regions and the regions of much rain coincide; fruit growing; sheep and cattle; gold and silver mining; copper regions, parks and reservations—National Park, Yosemite Park; Grand Canyon of the Colorado; the Salton Sea; lakes, hot springs; volcanic and earthquake regions; cities, people; great dams.

For the last month of the year we study the eastern section of our country comprising the Appalachian Mountains, Atlantic Plain, and the Gulf Coast. Which is the older Rocky or Allegheny? Compare them in height; note the few passes or gaps in the Appalachians. Why was West Virginia not sooner settled and developed? Observe that the rain and forest regions again coincide; canals; valleys; many rivers—of what value? Hard coal and soft coal regions; home of cotton; of tobacco; manufactures; petroleum oil and natural gas. No lakes—Why? Rice land; pine region and turpentine; naval stores; granite; marble; crushed lime; white lime; mountains of pure sand rock; fruit regions; people; products; cities; **Washington.**

At the beginning of the sixth year the course calls for an advanced geography of some good series in the hands of the pupils of the sixth grade. The work of the student will be mainly an intensive study of North America, the several sections of the United States as the New England States, the Middle Atlantic States, etc., according to the textbook used.

Devote the first month to a study of natural divisions, definitions, political divisions, kinds of government and mathematical geography; or if the geography adopted does not take these things up in the opening chapters, then study a large map of the world, the great ocean currents, the telegraph cables, and commercial routes and what the vessels carry; distances and speed of ships at so many knots an hour.

Under mathematical geography the pupil will study motions of the earth on its axis and around the sun; inclination of the axis; causes of changes of day and night and the seasons; why days are longer in summer, and when days and nights are of equal

length; polar day; latitude and longitude; parallels and meridians; isothermal lines; zones; the moon, its changes and other constellations and planets,—mostly observational work.

During the next three months study North America as a whole, then Canada, Mexico, the Central American states and Panama, including the canal with its history and supposed benefits. Compare Panama and the Nicaraguan routes. Compare Panama and the Suez canal; the earlier and later races inhabiting portions of North America; the glacial period, description and effect upon rocks, soil, lakes and rivers. Give a few lessons to Alaska, the Hawaiian Islands; the Philippines; the West Indies, especially Porto Rico and Cuba.

In Canada note the commerce of the St. Lawrence; beautiful cities; government; the great wheat region; the timber belts; the French in Canada; other settlers; canals; boundaries.

Mexico and Central America have not so much of interest as has Canada.

Study the Aztecs and Toltecs; Indians, Cortez and the Spaniards; government and President Diaz; American capital in Mexico, etc.

For the remainder of the year take up certain type studies in United States geography as the Baltimore and Ohio, and Pacific railroads; the Appalachian forest reservation; river navigation and canals, especially canals connecting Lake Michigan and the Mississippi, also Lake Erie and the Ohio; three great cities—say Washington, New York and Chicago; striking natural scenery—the Colorado canyon, the Yosemite Park, Natural Bridge, the Mammoth Cave, Luray Cavern, and Niagara Falls; lumbering in the Alleghenies; coal mining in Pennsylvania and West Virginia; fruit growing in the north and east; one lake and four rivers—Lake Superior, Hudson, Ohio, Mississippi and Sault St. Marie; corn growing in Iowa; a wheat crop in North Dakota; cotton and a cotton plantation; Erie Canal anl lake commerce; great dams—Shoshone, Roosevelt, Pathfinder; Denver ditch and irrigation; growing oranges in Florida and California; Mt. Washington and Pike's Peak; mining and a mining town—Butte, Montana; salmon fisheries of the Columbia; cod fisheries; oyster planting; iron mills and flour mills; great bridges; what is made in New England; lime, cement and sand; tunnels—Hoosic and under the Hudson.

Note. For the last two years select and adapt the course to

your school. Not all given is absolutely needed, but use most of it.

**Seventh Year.**

There are two things in geography teaching that should not be lost sight of; viz., the purpose or aim of the study, and the "how" to obtain the best results. An eminent authority gives these directions: "In advanced, as in elementary work, the reviews should be frequent and searching. The textbook in geography may of necessity contain much more material than is desirable for any one pupil to learn. This is essential to any useful textbook. Do not attempt to teach the physical features of a grand division from the ordinary colored map. Use a relief map if you can get nothing better, but by all means endeavor to use a sand or clay model. In early life we seek the picture of the thing if we can not have access to the thing itself; in many instances the picture is often more graphic than the thing. Thus, even in mature years, one can get a better idea of a city or a large area of country by consulting a bird's eye view than by traveling over the extent of country, or by wandering through the streets of a city. In the class room perhaps the most practical map-drawing is the hasty off-hand sketching of an area which the needs of the recitation demand. In a sketch map only a general accuracy of outline is required. If the pupil has been habitually trained to such work in the oral lessons on the moulding board there will be no difficulty in doing it quickly and with reasonable accuracy.

The ability to make a rough sketch map of a given area consistently and rapidly implies a great deal. Beyond the disciplinary value of such work the outline itself is more valuable than the wall or atlas map."

In map drawing why not use the parallels and the meridians? The professional draughtsman uses them for the best maps made. Of course, there are times when maps should be quickly made without any guide lines, but for a fairly correct map why not first draw the meridians and parallels and fill in the outline, mountains, rivers and cities. From such a map the pupil will carry away a correct knowledge of the location of things.

The progress in geographical work will depend largely upon the knowledge and skill of the teacher. If the class did not complete the course laid down for the sixth year, let it review what

remains of that year during the first part of seventh year, then take up South America and Eurasia, studying them by topics.

South America—shape, size, area; surface features; find ten points of similarity to North America; climate—two zones; people, wild animals, cattle and sheep, selvas, llanos, forests; commerce and large cities, most progressive countries; products and great rivers.

Brazil—compare with United States; streaming into the yellow waters of the Amazon mouth; largest river in the world—how many large tributaries? Rio De Janeiro, why the name? Coffee two-thirds of all used in the world,—when ripe and gathered? tropical forest; jaguar, tapir, monkeys, armadillo, parrots; rubber; cacao, boa constrictor.

Observe Chile, length and narrowness; Valparaiso and its harbor; Aconcagua; Juan Fernandes; railroad across Andes; silver and copper mines; double-decked street cars and women conductors; war over a northern desert—why?

Other country topics:—Buenos Aires, wheat growing, cattle and sheep—lead the world; The Incas, Pizarro and Peru; Titicaca; Quito and volcanoes; strait of Magellan; Peruvian bark; the condor; guano deposits; asphaltum; effect of completion of Panama canal; Iqueque and its industry; how much of South America comes under the vertical rays of the sun? Tell of the diamond mines and the Land of Fire; also of the wonderful Calliquiare river.

Eurasia (Europe and Asia) the largest grand division and more than one-third the land area of the world. Observe the irregularity of coast in certain parts—there the greatest commerce; note the southern highlands from Spain to China, cut through in only one place; look at the vast northern lowland or plain divided by one mountain range; observe the elevated plateaus of Tibet, Iran and Pamer, and five lower plateaus; describe the Himalaya mountains and the highest peaks; the river system and basins; some land below sea level; (most of northern Eurasia does not exceed 500 feet in height), trace the heat belts; the waters of what rivers never reach the sea—why? Forests,—satin-wood, teak, toon, India rubber, spice trees and dyewoods; peoples of Asia; five great powers of Europe; Turkey's troubles; the Aryans; civilization of Greece, and Rome; Anglo-Saxon growth; Teutonic countries; Latin countries; Slavonic Europe; governments; industries—one-half people engaged in agriculture; great

manufacturing cities; food belt of Europe; who own forests; forest conservation; mining, coal, salt, tin, iron; density of population in Europe and in Asia; commerce in Europe; exports and imports; canals and water transportation; British possessions; London and Peking; progress of Russia, Japan and China; the Hindus, civilization, religion and castes; Hongkong, Chinese rivers and canals; Manchuria; Tokyo; cause of Japan's wonderful growth.

**Eighth Year.**

Africa, Australia and the larger islands—current events, history and geography—study for four months.

Both Africa and Australia have few irregularities of coast and a great mass of unorganized, uninhabited territory, mostly desert. Follow outline:—

(1) Location, shape, size, area, and coast lines.

(2) Surface—mountains, highland plateaus, lowlands plains, drainage basins and great rivers.

(3) Climate—hot belt, temperate, rainfall, deserts.

(4) Life—peoples, wild animals, domestic animals, vegetation.

(5) Occupations and commerce, productions, commercial centers and routes, exports and imports.

(6) Political divisions,—English, German, French, Portuguese, Spanish, Italian, and Belgian possessions. Population, railroads, wars, progress.

(7) Islands—Madagascar, Philippine, Java, Borneo, New Zealand, Papua.

(8) Things of note—Suez canal, great desert and oases, thousands of square miles lower than the Mediterranean, forest regions, Assouan dam, sources of the Nile, diamonds.

(9) Boers, Majuba Hill, Livingstone, Stanley, Baker, McKay.

(10) History—Egypt.

(11) Things to note in Australia:—mostly a barren wilderness, England once sent its criminals here, Bushmen, plants, animals and men differ from those of other continents. Cities, progress in science of government, the rabbit a pest, gold, silver, tin, coal, mines, exports and imports.

(12) Products of the various islands; to whom belong, people.

(13) The Ocean—ocean currents, trade winds, ocean breezes and land breezes, zone and calms.

(14) Ocean routes of travel, Oceanic islands.

(15) History and geography combined all through the year in current events, a few minutes each day.

**Review Questions.**

Interest in geography may be increased by the following review and search questions. Not all need to be used:

(1) Which the largest ocean and where the deepest? (2) Discuss international date line? (3) How may a man traveling gain or lose a day? (4) How lose two days? (5) Where are the tides the highest? (6) Where are Guam and Tutuilla? (7) Of what value? (8) Where and what are the Sarogasso Seas? (9) Where are typhoons, monsoons and hurricanes most prevalent? (10) Where are the days always equal? (11) When is a good sundial correct? (12) When does our civil day begin? (13) What is a solar day and a mean solar? (14) Why are some solar days longer than others? (15) What places have no latitude? (16) Which is the largest planet and which the smallest? (17) Which the most distant? (18) Is the earth always the same distance from the sun—Why? (19) How many stars and how far away? (20) What is the Milky Way? (21) What causes an eclipse of the Sun? (22) How much is the earth flattened at the poles? (23) What are the asteroids, comets, and meteors? (24) Did you really see a falling star? (25) What became of it? (26) Give five proofs of the earth's sphericity. (27) Tell about very deep Wheeling well. (28) How thick is the earth's crust? (29) Do you know the geographical periods? (30) In what period was coal formed? (31) In what did man appear? (32) What became of the debris from the Colorado Canyon? (33) Do you think the Colorado region was once the bed of a sea several thousand feet thick and, little by little, hardened into rock? (34) What trouble with the Salton Sea? (35) Where are volcanoes most numerous? (36) Galveston's great wall and San Francisco new and better than before the earthquake. (37) How high is the atmosphere? (38) What is the air pressure at the sea level? upon a square mile of the earth's surface? (39) Of what is the air composed? (40) What value has nitrogen in the air and in the soil? (41) Name ten peninsulas and five isthmuses. (42) Spring wheat in Athabasca is harder and better than that in Minnesota—Why?

(43) What do you know of the Canadian wheat belt? (44) What are the industries of Newfoundland? (45) What historical event at Quebec? (46) Explain Niagara falls. (47) Vessels go around it how? (48) Locate Nome, Dawson City, Magnetic pole, and a large Alaskan glacier. (49) Describe Canadian Pacific railroad—its length, construction, course and termini. (50) Where are greatest Canadian forests? (51) Name five gold regions of North America, three copper, five silver, three iron, three lead?

**Review Questions**—Continued.

**Mathematical and General.**

1. How many planets? Name them.
2. Which the largest and which smallest?
3. Which most distant? Which has nine moons?
5. How many earths to equal the sun? 6. Any gold in the sun?
7. How do we know? 8. What is the Solar system? 9. What are stars?
10. How far away is the nearest star?
11. Can you point out Ursa Major, Ursa Minor, Orion and the North Star?
12. What are asteroids and planetoids? How many?
13. How long does it take sunlight to reach the earth?
14. What theories about the earth's origin?
15. What is the condition of the earth's interior?
16. What five proofs that the earth is a sphere?
17. What evidence that it is an oblate spheroid?
18. What keeps the earth in its place—orbit?
19. What three movements has the earth?
20. Why are the earth and other planets spherical?
21. How much does the earth's surface curve in two miles?
22. What are igneous rocks? Primary and secondary?
23. What are sedimentary? 24. Describe sedimentary rock of Colorado canyon. 25. What evidence that Appalachian mountains were once under sea?
26. Which the older mountains, Rocky or Allegheny?
27. In what period and how was coal formed?
28. Where the first traces of plant life, of animal life?
29. How do we know that man came in tertiary period?
30. Are the waters of our large lakes level or curved?

31. Name three regions below sea level.
32. Name five lakes or inland seas that contain salt water—Why?
33. Circles on the earth, kinds and number.
34. How many great circles? Which one the greatest?
35. Why are the tropics of Cancer and Capricorn 23 degrees 27 minutes from the Equator? 36. What point is latitude 90 degrees north?
37. When is a place due east of another?
38. What difference between common and geographic miles?
39. The Lusitania steams 30 knots an hour—how far in a day?
40. What difference between civil, solar, mean solar, siderial, equatorial and polar days?
41. How many rotations of the earth in a year?
42. Is our year tropical or siderial or solar?
43. What is the orbit of the earth—shape and length?
44. What is the Nebular Hypothesis?
45. What is the velocity of the earth around the sun?
46. Is this movement uniform—Why?
47. What causes change of seasons?
48. The astronomical year begins March 20th and days and nights are everywhere equal—when again equal?
49. How much longer is the sun north of the equator than south of it?
50. How many solstices and when?
51. What difference between mathematical and physical zones?
52. What four kinds of geography?
53. What is the length of longest day at the equator? At the poles?
54. What is the length of the day at the Arctic circle?
55. What keeps the stars and planets in their orbits?
56. Has our sun any motion?
57. Does the needle of a compass point north? (It points to the true north in the U. S. on one line only and that line is slowly moving. It now passes near Lansing, Fort Wayne, Knoxville and Columbia, S. C.)
58. What caused sudden change of needle on ship of Columbus?
59. What is moon light? 60. How much of sun light reaches earth?
61. What capitals of Europe are due east of Columbus and Wheeling?

62. What latitude is New York? 63. What latitude is London?
64. How many elementary substances on the earth?
65. Of what is air composed and in what ratio?
66. Instrument to measure heat, to measure air pressure?
67. How do air and water differ? 68. Extent of atmosphere?
69. Movements of air. 70. Trade winds and their direction —Why?
71. Land and sea breezes—cause? 72. What is climate?
73. Upon what does temperature depend? 74. What causes deserts?
75. Greatest and least rainfall in West Virginia—Cause?
76. Heavier—cold or warm air?
77. What causes the Gulf Stream?
78. Which carry most water, the warm or the cold currents—Why?
79. How many Atlantic cables? 80. Describe bed of North Atlantic.
81. Laying of first Atlantic cable.
82. Where is the rainfall greatest in the world?
83. In glacial period how far in Ohio and West Virginia did the glacier come?
84. What made our five great lakes? 85. What are icebergs?
86. Name five prominent races. 87. Two leading occupations of man.
88. Name five great religions. 89. What is government?
90. Which outnumber, republics or monarchies?
91. Why must republics educate their people?
92. What makes a nation great?
93. In what climate does man reach highest attainments?
94. What is the thermal equator?
95. What causes a heavy rainfall along the Atlantic Coast?
96. What causes fogs of Newfoundland?
97. Rain in Northern California, little in Southern—Why?
98. Why but little rain in Utah and Nevada?
99. What are the isobars on a weather map?
100. Describe a cold wave flag and a fair weather one.
101. What is Standard Time?
102. Where change time in going to California? From Washington?
103. In going to Honolulu?

104. Where salt region of U. S.?
105. What environments of man are of most influence? What historical events occurred at the following places, or for what noted?
106. Quebec. 107. Detroit. 108. Nova Scotia.
109. Salem, Lexington and Lowell, Mass.?
110. Lake Champlain, Lake George?
111. Chautauqua (N. Y.), West Point and Saratoga?
112. Philadelphia, Gettysburg, Trenton, Harpers Ferry?
113. Antietam, Yorktown, Norfolk, Moundsville?
114. Point Pleasant, Philippi, Raleigh, Charleston, (S. C.)?
115. St. Augustine, Atlanta, Chattanooga, Mobile?
116. Vicksburg, New Orleans, Hot Springs?
117. Galveston, Minneapolis, Duluth?
118. Seattle, San Francisco, Salt Lake?
119. Mexico, London, Manchester, Paris, Lisbon,
120. Athens, Rome, Moscow, Sevastopol?
121. Granada, Corsica, Brussels, Mt. Olympus?
122. Manila, Peking, Port Arthur, Yokohama?
123. Lucknow, Calcutta, Mecca, Suez?
124. Khartoom, Alexandria, Kimberley?
125. Melbourne, Hawaii, Santiago?

## LITERATURE AND HISTORY.

Literature and history are kindred subjects and should not be widely separated. As history expresses the real side of life and literature the ideal, both are closely related to human experience. The study of literature and history in school should, like any other study, contribute to the social welfare of the community and to the individual welfare of the child. These two aims may be made to contribute one to the other for one of the fundamental needs of the child is to be identified with its social environment and one of the needs of society is to provide for the maintenance and full development of the individuality of the child.

These two aims should be prominent in the selection of subject matter in literature and history. The aim to contribute to social welfare will give first place to American history, second place to English history and literature, third place to Ancient, European and Oriental history and literature. The second aim to develop the individuality of the child will put literature and

history in the school in all the grades and will repeat in the curriculum of the child the race development in civilization. The literature and history will begin with myth, legend, folk-lore, and choice poems suited to the age and attainments of the child, and a study of primitive life; in the third and fourth years biographical study will be emphasized; in the fifth and sixth years the discovery, exploration and settlement of America, and stories and biography from English history will be studied. Beginning in the sixth year and continuing in the seventh a more systematic study of United States History will be made with a textbook. Any elementary text in history the children may have should be used only as a supplementary reader with the fifth reader.

The literature and history should be closely correlated with the reading, geography, and civics. The literature and history should very largely furnish the motive and the opportunity for the child to learn to read. The child should be led to see the historic movement in civilization; how the needs of man have pressed upon him and compelled him to make a struggle to secure better food, clothing, shelter, education, morals and manners, and religion, and lead the pupil to appreciate and participate in the general struggle which man is making for freedom.

Literature and history from the first to the fifth year inclusive should represent one daily exercise on the school program. The school library should furnish abundant books for literature and history. In some cases the library should own two or three copies of a book; in most cases, however, one copy will be sufficient. The books in use at any given time should be kept on a table in the school room and should be accessible at all times to the pupils. In the brief outline given below for each year a few books are referred to and a few selections from the books are suggested. These references and suggestions are made to help the teacher choose and organize subject matter but no teacher is supposed at any given time to use all the references and selections or to be limited to those given below.

Literature and history in the lower grades should be presented in the form of stories well told. Reading the stories to the children is a poor makeshift at best. In the study of literature after the children have the story clearly in mind, the selection may be read aloud to the children to get the literary effect. As the children advance they should be encouraged to read the stories and poems they have learned in the previous half

year or year for themselves. However, care should be taken that the pupils do not attempt to read what is too difficult for them.

There are three books every teacher should own and study and use freely. They are: Bryant's How to Tell Stories to Children, Houghton, Mifflin & Co., Boston; Cox's Literature in the Common Schools, Little, Brown & Co., Boston, and Barbe's Famous Poems Explained, Hinds, Noble & Co., New York City.

### First Year.

The literature and history should aim to furnish not only sensory but motor training as well. The stories should be dramatized and acted out in games and plays. The stories should be retold by the pupils in drawings, in paper cutting, in clay, sand, wood, etc. The child's reproductive and constructive imagination can be stimulated by this motor training and the stories interpreted by the child in the most satisfactory manner. The study of primitive life furnishes abundant opportunity for this motor training for which the books—the Tree Dwellers, the Cave Dwellers, and the Tent Dwellers are very suggestive.

**References:**

Bryant, Stories to Tell the Children.
Verse and Prose for Beginners.
Dopp., The Tree Dwellers.
O'Shea, Six Nursery Classics.

**Selections:**

The Land of Nod.
My Bed is a Boat.
Little Bopeep.
The Three Bears.
The Old Woman and Her Pig.
The House that Jack Built.
The Story of Sharptooth.
The Story of Bodo.
The Little Red Hen.
Robert of Sicily.

### Second Year.

**References:**

Williams, Choice Literature, primary book 1.
Cowles, Stories to Tell.
Bradish, Stories of Country Life.
Baldwin, Fairy Stories and Fables.
Dopp., Early Cave Men.
Baldwin, Old Greek Stories.

**Selections:**

Little Red Riding Hood.
Jack and the Bean Stalk.
Dick Whittington and his Cat.
How Fire Came to the Indians.
The Story of Flax.
The Story of Coal.
The Story of Strongarm.
The Story of Firekeeper.
The story of Io.
The Wonderful Weaver.
The Story of Atalanta.
Cadmus and Europa.

## Third Year.

**References:**

Burt, Poems Every Child Should Know.
Mabie, Norse Stories.
Chance, Little Folks of Many Lands.
Chadwick, World History of Myth and Legend.
Carroll, Around the World, books 1 and 2.
Clyde, Through the Years, books 1 and 2.
Andrews, Each and All.
Baldwin, Old Stories of the East.
Dopp., The Later Cave-men.

**Selections:**

Odin's Search for Wisdom.
The Wooing of Geed.
Thor's Wonderful Journey.
The Story of Creation.
Story of Niobe.
Story of Goba.
Story of Ikwa.
Story of Washington.
Story of Lincoln.
Thanksgiving Stories.
Christmas Stories.
Story of Columbus.
The Man Whose Eyes Were Open.
The Shepherd Boy Who Become King.

## Fourth Year.

In the fourth year the history becomes more biographical and correlates more closely with geography. Map drawing and map interpretation should be taught in connection with history in this and the remaining grades.

**References:**

Wilson, History Reader.
Pratt, American History Stories, Vols. 1 & 2.
Dopp., The Tent Dwellers.
Brooks, Stories of the Red Children.

McMurry, Pioneers on Land and Sea.
Moore, Pilgrims and Puritans.
Hart, Colonial Children, Source reader, No. 1.
Starr, The American Indians.
Snedden, Dorcas the Indian Boy.
Pratt, America's Story for America's Children, books 1 and 2.
Hall, Viking Tales.
Carroll, Around the World, book 3.
Daws, Stories of Our Country.
Shaw, Discoverers and Explorers.
Burt, Poems Every Child Should Know.
Selections from Whittier's Child Life in Poetry and Prose.

**Selections:**

Seven Times One.
The Brook.
Hiawatha's Childhood.
Visit from St. Nicholas.
Robin Redbreast.
Story of Chew-chew and Fleetfoot.
Story of Flaker.
Story of Harold.
Story of Eric.
Story of Leif.
Olaf and Snorri.
The Little Pueblo Prince.
Story of the Pilgrims.
Story of Pocahontas.
Mounds and Mound Builders.
Story of Cortes.
Story of Hudson.
Story of John Smith.

## Fifth Year.

American stories and biography should be studied in the fifth year and in the latter part of this year stories from English history should be introduced and continued in the sixth year. Warren's Stories from English history, published by D. C. Heath & Co., is well suited to aid the teacher in directing the study of English history stories.

**References:**

Pratt, America's Story for America's Children, books 1 and 2.
Eggleston, Stories of Great Americans for Little Americans.
Bass, Stories of Pioneer Life.
Eggleston, Stories of American Life and Adventure.
Radford, King Arthur and his Knights.
Pratt, The story of King Arthur.
Warren, Stories from English History.
Baldwin, Discovery of Old Northwest.

Baldwin, Conquest of Old Northwest.
Hart, Camps and Firesides of the Revolution.

**Selections:**

Virginia Colony.
Marquette.
La Salle.
Gen. Braddock.
Story of Pontiac.
Daniel Boone.
Down the Ohio.
Grandfather's Story.
Franklin.
King Arthur.
Launcelot.
Story of Caesar.
Coming of Augustine.
Story of Alfred the Great.
Story of the Normans.

## Sixth Year.

In the latter part of the sixth year U. S. History should be taken up somewhat systematically with the advanced textbook for the grades and alternate in the seventh and eighth years with general history. The history in these years should correlate closely with geography. Pupils should be taught to draw historical maps with neatness and accuracy. The geographical relations of history and geography should be brought out. The time to teach a subject is when the pupils need that subject; here in history is the place pupils need geography and this is the time to teach it just as in teaching composition is the time to teach spelling. A book every teacher of history should own, possibly have a copy in the school library, is Brigham's Geographical Influences in American history, Ginn & Co.

The pupils in the sixth, seventh and eighth years should have one daily recitation in history.

**References:**

Pratt, America's Story of America's Children, book 5.
Life Stories of Great Americans for Young American readers.
Kingsley, Story of Lewis and Clark.
Rolfe, Tales from English History.
Rolfe, Tales of Chivalry.
Warren, Stories from English History.
Guerber, The Story of the English.
Guerber, Story of the Thirteen Colonies.
Guerber, Story of the Great Republic.
Baldwin, Abraham Lincoln.
Hart, How Our Grandfathers Lived.

**References:**

Longfellow, Miles Standish, Hiawatha, Giles Corey.
The Building of the Ship.
Hawthorne, Grandfather's Chair, The Gentle Boy.
Tales of the White Hills, The Wonder Book.
Whittier, Mabel Martin, Among the Hills.
Dickens, Child's History of England.
Macaulay, Lays of Ancient Rome.
Lowell, Jason's Quest.
Frost, Knights of the Round Table.

**Topics:**

The Crusades.
The Great Charter.
Black Death.
William Caxton.
The Tudors.
The Reformation.
Sir Thomas Moore.
The Reform Bill.
Spinning and Weaving.
Wilberforce.
Queen Victoria.
The American Revolution.
Louisana Purchase.
Lewis and Clark.
American Inventors.
Territorial Extensions,
Texas, etc.
Daniel Webster.
Abraham Lincoln.
Spanish Armada.
Francis Drake.
Walter Raleigh.
Oliver Cromwell.
The Stuarts.
Gen Rolfe.
William Pitt.
Lord Nelson.
Wellington.
James Watt.
John Howard.
Livingston.
England's Colonies.

## Seventh Year.

Textbook American history should begin with the latter part of the sixth year or the first part of the seventh year. The pupils are now prepared for an elementary systematic study of United States History. The period of exploration and discovery and the condition of England should be summed up from previous studies and the order of the textbook followed. The sequence of events and causal relations should be traced with care over long periods. For example, the history of the slavery question, the American Indians, etc., should be traced to the present time and the present status and problems of each question studied in a

connected way. Let the map work be well done and insist on the pupils reconstructing the events into clear ideas and notions.

**References:**

Hart, Romance of Civil War.
Fisk, The War of Independence.
Channing & Hart, Guide to American history.
Judson, The Growth of the American Nation.
Brigham, Trail to Railway.
Fisk, History of U. S.
Hart, Formation of the Union.
Thomas, History of U. S.
Baldwin, Four Great Americans.
Perry, Four American Inventors.
Longfellow, Evangeline, Paul Revere's Ride.
Emerson, Lexington, Boston.
Holmes, Grandfather's Story of Bunker Hill.
Franklin, Poor Richard's Almanac.
Hawthorne, Biographical Stories.
Browning, The Pied Piper of Hamelin.
Baldwin, Story of Roland.
Williams, Choice Literature, book 1, grammar grade.
Robinson Crusoe.
Rab and his Friends.
The Gold Bug.
McMurry, Pioneers of Mississippi valley.
McMurry, Pioneers of Rocky Mountains.

## Eighth Year.

In the seventh and eighth years U. S. history and general history should alternate, that is, every other seventh year should be given to teaching U. S. history and every other eighth year should ge given to teaching general history. This plan of alternating by years has been found successful. It saves time for pupil and teacher, the classes are usually of more desirable size, and it is possible to develop more interest in the subject.

The school library should contain a number of the best textbooks on general history. It should also contain a few standard elementary histories on each of the following: Greece, Rome, Mediaeval Ages, England, and Modern history for supplementing the textbooks in general history.

**References:**

Guerber, Story of the Greeks.
Guerber, Story of the Romans.
Scott, Tales of a Grandfather.
Pitman, Stories of Old France.
Warner, In the Wilderness.
Longfellow, Tales of a Wayside Inn.
Skeleton in Armor, Evangeline.
Lowell, Under the Willows, Singing Leaves.
Biglow Papers.
Bulfinch, Age of Fable, Age of Chivalry.
Williams, Choice Literature, book 2, grammar grade.
Curry, Literary Readings.

## CIVICS.

Civil government should be prepared for by a proper organization of the school. The pupils should have opportunity to participate in the school government. There should be a literary society in connection with the school, which should be organized and managed by the pupils, under the direction of the teacher. The literary society should be governed according to parliamentary law which the pupils themselves should interpret and apply with the assistance and oversight of the teacher. The school can still further prepare for and aid in the study of civics by organizing itself on the plan of the city state which is simply the school organized on the plan of a city government with its constitution and bylaws, mayor, court, council, police, etc. All this should be provided for and carried out, under the direction of the teacher, by the pupils themselves. The study of civics should be anticipated by the teacher in teaching history and geography.

The textbook study of civics should be further prepared for by an oral study of local civil government which should begin with the school itself and extend out to the sub-district, the trustees, the district, the board of education, truant officer, etc. Then the local highways, the local mail service, and the civil officers—justices of the peace and constable—about which the pupils know something at first hand by observation and inquiry, and can know and ought to know very much more than they do, should be studied with care. The pupils should contribute what they know and be requested to find out more from their parents and others. The territory studied should be carefully mapped by the pupils. and the results of the study written out in order by the pupils.

It should be remembered in the study of civics as in the study of any other subject that information, what to do and how to do it, alone is not education. To get at the education value of any subject, the causal relation of things, the connectedness of things, must be searched for in a systematic manner. Let the teacher plan the oral work in civics to bring out from the pupil the need of people, uniting to do many things, the need of regulations or laws, the need of elected or appointed officials, and the interdependence of human beings. Here the previous study of primitive life as well as the plan of study of primitive life will suggest much.

During one half of the eighth year—three, four, or five months as the case may be—there should be one daily recitation in civics.

This study of one half the school year should be alternated with bookkeeping; as should be done with general and United States history in the seventh and eighth years. By this plan civics would be taught one half of one school year and bookkeeping one half of the next school year and so on from year to year. It might be suggested here that the remaining half of every eighth year should be given to a systematic study of physiology as an elementary science.

It is assumed in these outlines of history and civics that there will be no recitations in state history as such but that whatever of the subject ought to be taught will be taught in connection with history, state geography, and civics. Here at this point in civics when the elementary textbook is taken up the historical development and organization of the state should be restudied for the civil government in the state history. Then the order of the textbook in civics should be followed and supplemented with other texts and books from the school library.

## NATURE STUDY.

Nature study is the study of the world of out door objects and phenomena. Its purpose is to aid in building up the child's mind by direct observation of the common things in the child's environment. It should put the pupil in a sympathetic attitude toward nature for the purpose of (a) increasing the joy of living and (b) laying the foundation for an appreciation and understanding of geography, botany, zoology, physiology, agriculture, etc. The child must have rich abundant individual experience before it can come to a knowledge of its inheritance, the race experience.

Books form no part of this study. Nature study is to precede the use of books on the part of the pupil. The child here must get sense contact through naked eye, ear. touch, smell, and taste of the world around it. The best nature study is observation out doors, although some of the specimens for observation can be brought into the school room.

In the choice of material for study there are two determining factors (a) the objects and phenomena for observation and study must be those of which the teacher has most knowledge and in which he has most interest (b) the material must be that which is commonest, easily seen and appreciated, and nearest and dearest to child life.

When the material, objects or phenomena, for nature study have been selected, the method of approach is simple enough. There are then three things in the order of approach and contact of the child's mind (a) the fact, object or phenomena sensed by the child, (b) the reason for the fact sensed by the child (c) the interrogation left in the mind of the child.

### First and Second Years.

Homes. The homes of the children, the homes of the smaller animals of the neighborhood, coverings of these animals in the neighborhood, pets kept by the children.

The weather. Signs of the weather, the effect of heat and cold upon plants and animals.

Trees. Learn the names of ten or twelve trees. Study the fruit especially of the nut bearing trees, bark, leaves, and general shape of the trees.

Flowers. Observe only the common wild and cultivated flowers. Learn where they grow and their habits of growth.

Excursions. Make frequent excursions to the woods, fields, streams, ponds, etc., to find the living things in them. These excursions should be carefully planned by the teacher by going over the route and getting clearly in mind what is to be observed by the children.

### Third Year.

Continue topics of first and second years and observe clouds, rain, sunshine and shadow, and wind. Make and fly a kite and make a weather vane. Begin season observations.

Home geography. Explore the country about the school to observe the contour and the forces at work. Make a map to show natural features, roads, farms, towns and dwellings. Make a map of some farm in the neighborhood showing all the details of the farm. Begin a survey of some brook or stream in the neighborhood.

Insects. Study only the simple life history. How the insects make their living.

Birds. Learn to know a dozen common birds, their song, nest making, haunts, etc. Make a chart of the arrivals and departures of the birds in your neighborhood.

### Fourth Year.

Determine the animal and plant population of your neighborhood. Make maps and charts showing distribution. Continue the study of trees, birds, insects. Make drawings and charts to sum up the observations made. Continue the study of weather. Keep a weather record, use the thermometer for the study of temperature. Continue the survey and study of the brook or stream of the previous year.

Begin the study of seeds, planting, sprouting and growth of plants. Study the leaves, bark, root, stem, flower and fruit in woods, fields and specimens brought into the school rooom.

Begin the study of the uses of animals. How they were domesticated, the changes brought about by domesticating wild animals. Make a study of a cat, dog, chicken and compare with the nearest wild animal of its kind.

### Fifth Year.

Continue the study of the weather and domestic animals. Keep a record of prevailing winds and their relation to rain, temperature, etc. Continue the study of the brook or creek and the living things in and about it.

School garden. Have children give accounts of their home gardens. Visit gardens and note the preparation, care, plants, etc. Have a school garden even if it is a small one, and the season or part of season short. Put some spring, summer, fall and winter plants in your garden.

Continue the study of insects, the uses of insects affecting plants and animals. Conditions fostering flies and mosquitoes, their life history, uses and dangers of such insects.

Use the topics lumbering, mining, farming, fishing, as subjects for observation and study. Make excursions to these industries, collect some of the rocks and minerals in your neighborhood.

### Sixth Year.

Continue the observation and study of the material and topics of the previous years that are most abundant and characteristic of your neighborhood. Correlate closely with the geography, physiology and hygiene. Continue to develop the school garden. Make a map or chart of the brook or stream you have been studying.

Introduce the study of atmosphere, heat, light, and electricity. Get all your data or facts by actual observation. Keep accurate records and interpret your facts with care.

Teach the relation and dependence of plants, lower animals and human beings. Develop the proper idea of care, respect, and sympathy for plants and animals. Study a few insects and animals more intensively than you have done.

Books for teachers:

Bailey, The Nature Study Idea.
Hodge, Nature Study and Life.
Thompson, Study of Animal Life.
Chapman, Bird Life.
Comstock, Insect life.
Jordan and Kellogg, Animal life.
Blanchan, Bird Neighbors.

Hemenway, How to Make a School Garden.
Nature Study Review, a monthly journal.
Cornell University leaflets.
Publications of the Department of Agriculture, Washington, D. C.

## ELEMENTARY AGRICULTURE.

### Suggestions and Directions.

During the first year of the child's school life the endeavor has been to promote his growth mentally and physically and to store up as many facts by observation of the world around, as was possible, to become the basis for much of his future knowledge. He will be poorly prepared for agriculture unless he has lived in touch with nature during these years.

If such has been his good fortune, with his training in geography by observation and teaching for three years, then he is ready for agriculture in his seventh school year.

Throughout the preceding years he, no doubt, has observed and learned much about the animals, both wild and domestic, of his neighborhood, the common plants, flowers and vegetables, and much about the weather.

Probably he has learned values of numerous domestic animals, the useful and harmful insects, names and habits of many birds, honey and the honey bee, something about the soil in his district, good crops and poor ones and the necessity of rain.

Agriculture is a healthful, practical, cultural study. It is healthful because it calls for so much outdoor observation and work; it is practical because one-half the people of the world are engaged in it to raise food for themselves and the other half; it is cultural because it leads him to love the fields, the forests, the birds, all nature and his Creator.

"To him who in the love of Nature holds Communion with her visible forms, She speaks a various language."

It is a comprehensive study; it deals with the very important facts of life and growth; with the laws of life, of heredity, of adaptation, of environment, of selection.

It involves the study of the ground, the waters, the forests, the air, germination, fertilization, and cultivation, in order that crops may be grown.

In the **study** of Agriculture the **why** is more important than the **how** or the **when**; but he who can show the **how** of many agricultural facts and truths will succeed best as a teacher of it.

It is not necessary that the teacher know all about agriculture

to teach some of it, but the greater his knowledge and experience the better.

If the members of the class have books, the work will be easier for the teacher. Have the children read the lesson to their parents at home and get their opinions. At first the lesson may be read in the class and its teachings discussed; the teacher each day should by a series of pertinent, searching questions review some of the previous lessons.

The teacher should have a book to serve as a guide whether the children have books or not.

If a book has been adopted then it should be followed, but in any case, with an adopted book or without one, the following topics should be taught more or less thoroughly, according to the time given to agriculture. Many simple experiments should be performed by the pupils under the direction of the teacher, and excursions made to the farms and fields, if possible.

### Seventh Year.

(1) Weather observations; use of weather maps; flag signals; isobars and isotherms; high and low direction of winds; where rain comes from. Have weather map on the board, to be kept by the pupils, with the following headings: temperature, clear or cloudy, rainfall, winds, frost or snow, sun rises, sun sets, moon.

(2) Domestic animals:—horses, cattle, sheep, hogs, chickens, turkeys, geese, ducks, dogs, goats. Wild animals:—rabbits, squirrels, quail, coons, opossums, groundhogs, pheasants, turkeys, deer, and bear.

(3) Birds not game: bluebird, wren, Baltimore oriole, blue jay, towhee, robin, catbird, cardinal, meadowlark, scarlet tanager, flicker, woodpecker, owl, swallow, English sparrow, brown thrush, crow, black bird, rain-crow, gold-finch, bee bird, king fisher, loon, humming bird, chickadee, sapsucker, night-hawk, whippoor-will, snipe, chicken hawk, turkey buzzard, screech owl, dove, sparrow, swallow, phoebe, house finch.

(4) Trees: Oaks (black, white, red, burr, chestnut), beech, linn, poplar or tulip, cucumber, sugarmaple, chestnut, dogwood, gum, wild cherry, sycamore, elm, ash, cedar, hickory, walnut, catalpa, locust, willow, pine (white, yellow), spruce, hemlock, birch, ailantus, magnolia.

(5) Soil: origin, tillage, moisture, water, drainage, improvement, enrichment, fertilizers.

(6) Plants: roots, food, tubercles, sap, current, flower, seed, flowering, crosses, propagation, seeding, weeds.

(7) Diseases: yeast, bacteria, blight, smut, scab, knot, curl, wilt, mold.

(8) Gardens: hot beds, asparagus, beans, cabbages, celery, cucumbers. egg plant, onions, tomatoes, radishes, melons, flowers.

(9) Fields: corn, rye, oats, potatoes, wheat, rice, cotton, grass, (alsike, alfalfa, red clover, red top, orchard, timothy), peanuts.

(10) Agriculture in neighborhood: yield per acre of wheat, potatoes, oats, corn, and quality. Horses, cattle, sheep, poultry, fruits, vegetables, bees, character of farms, soil, buildings, forests, water.

(11) Clover and other legumes. Inoculation of soil. Lime for clover.

(12) Injurious plants, birds and insects. The plague of flies, and mosquitoes.

(13) Farming: crop rotation, tillage, deep or shallow tillage; gathering crops, marketing, machinery.

(14) Good roads, good schools and transportation.

**Eighth Year.**

Write to the department of Agriculture at Washington for free pamphlets on fruits, potatoes, corn, wheat, clover, fertilizers, etc. Write to the department of agriculture, West Virginia University for bulletin on noxious weeds, on fertilizers, and for other bulletins that may be helpful. Send 15 cents to C. M. Parker, Taylorville, Illinois, for 12 leaflets on the Study of Agriculture.

Write Congressman of your district for such agricultural publications as he can send your school.

From Department of Agriculture at Washington you can get bulletins as follows, and a hundred others:

229, Seed Corn.
81, Corn (cultivation).
35, Potatoes.
192, Farm Manure.
173, Forestry.
134, Tree Culture.
63, Milk.
49, Sheep.
95, Good Roads.

203, Canned Fruits.
28, Weeds, and How to Kill Them.
43, Facts About Milk.
134, Tree Planting on School Grounds.
257, Soil Fertility.

Review the seventh year, get ready for numerous experiments, follow your book but give out some of these search questions each day.

(1) What are the worst weeds of neighborhood?
(2) How propagated and how destroyed?
(3) In what ways are weeds an injury?
(4) Plant beans in box at depths of 1 inch, 2, 3, 4, and 5 inches. How long for each to sprout?
(5) How long to come up?
(6) What seems best depth to plant beans?
(7) Let pupils try corn, wheat, peas, and other beans?
(8) What breeds of cattle in your county?
(9) Which are best for fattening on grass?
(10) Which best for corn feeding?
(11) How many acres pasture to the steer?
(12) What cows are best for the milkman?
(13) What cows are best on the farm?
(14) Name four breeds sheep.
(15) Which thrive best in our state?
(16) Which yield most wool?
(17) Name several kinds of horses.
(18) What are the bestbreeds for farm use?
(19) Why do not horses bite off grass the same way as cows?
(20) How many stomachs has a cow?
(21) What is meant by "chewing the cud"?
(22) Describe teeth of a cow.
(23) Watch a horse and a cow lie down—what difference?
(24) When a horse trots how many feet on ground at same time?
(25) How start a balky horse?
(26) How many rows on an ear of corn?
(27) How many grains on largest ear you can find?
(28) When corn was silking some silks were pulled off—What effect?
(29) How make an ear grow odd rows?

(30) How does corn mix though not in same field?
(31) How can you improve the quality of corn by a proper selection of the seed.
(32) Name four kinds of corn.
(33) What seems best for your county?
(34) How select seed corn?
(35) How know whether it will grow?
(36) Color of cob in white corn? In yellow?
(37) Weight of bushel corn? of bushel potatoes, of wheat?
(38) How many grains of corn to plant in a hill?
(39) How many stalks to leave in a hill?
(40) Why top corn instead of cutting it up?
(41) When is best time to select seed corn?
(42) What does a plant breathe?
(43) What does a plant live upon?
(44) Where does it get its food, its water?
(45) What two things does a plant give off?
(46) Do you think it possible that a large elm will give off five tons of moisture in a day?
(47) What kinds of soil in neighborhood? (Students make a selection).
(48) Which seems best?—Why?
(49) What is humus?
(50) What difference between soil and subsoil?
(51) How test soil students have brought in?
(52) Count all the plants growing on a sq. ft. of soil.
(53) What prevented a large crop of wheat in the county?
(54) Of corn, of apples, of oats?
(55) What is a good ration for a horse?
(56) What will cost be a month?
(57) What rough food—timothy, clover, millet, straw, fodder, sheaf oats?
(58) What insects have damaged crops this year.
(59) What are "scab", cedar rust, frogs eye?
(60) What is "Bordeaux mixture" and how made? (See circular 77 Dept. Agriculture).
(61) For what is the lime sulphur salt spray used? (See bulletin circular 52.)
(62) How do insects affect the health of community? (See bulletin 155.)
(63) What are peach "yellows"?

(64) In canning fruit why seal at once before cooling?
(65) Select three apples, one sound, one bruised, one bruised and skin broken—lay away for a few days and note results. Of what value is the skin?
(66) What caused one apple to decay faster than the others?
(67) What causes sour bread? (Farmers Bulletin 203.)
(68) How many bushels corn in a crib 12 ft. x 4 feet. x 8 ft.?
(69) How many acres in a field, two sides parallel (100 rods and 160 rods) end, perpendicular to parallel sides, 60 rods?
(70) How can men tell the age of forest trees?
(71) Are all bacteria harmful?
(72) Wagon wheels on farm—wide or narrow tires?
(73) Each student makes map of a farm—Size of it and each field?
(74) What seeds will not produce same variety?
(75) What are fistula, ringbone, heaves, spavin, splint?
(76) What is a day's work in plowing?
(77) How many bushels of corn should a man husk in a day?
(78) By hand how many dozen wheat should he cut?
(79) When do pines shed their leaves?
(80) Where are the seeds of pines?
(81) How are seedless oranges and apples produced?
(82) What is average of wheat or corn per acre in your district?
(83) How high is the average horse?
(84) Which are taller, boys or girls of 7, of 10, of 16?
(85) Which the heavier at 7, 10, and 16?
(86) What the cost of raising acre of wheat? or corn? or potatoes?
(87) At present prices which pays best?
(88) Which wears out land most rapidly?
(89) When are buds formed for next year's apples?
(90) Why not two great crops of apples in succession?
(91) How much milk should a good cow give in one month?
(92) How much butter in one month?
(93) What was average rainfall and average temperature for last month?
(94) Get variety of clover and timothy seeds—test—how pure?

(95) How many toes has a chicken, a dog, a cat, a horse?
(96) Experiment in evaporation—which greater, from loose or packed soil?
(97) Put seeds on blotting paper, keep moist, cover in warm place, note the small hairs on roots—of what value are they?
(98) How test seed corn?
(99) Why does a hen need gravel?
(100) Does a chicken ever have hair on its body?
(101) How much does a tree grow in a year? A boy?
(102) How plant and grow strawberries? (Farmers' Bulletin 198).
(103) How kill out wild onions, buck plantain, elder (alder)?
(104) How destroy briers, thistles, white top, daisy?
(105) How far apart should rows of corn and hills be?
(106) Will it pay to build barns to hold all hay?
(107) What trees on school lot? Can you find better for shade?
(108) Can students say that chickens pay? How do they know?
(109) What five best apples for home use? What three for sale?
(110) What peas, cherries and peaches to plant?
(111) How many eggs per hen in a year?
(112) How many posts 8 ft. apart to fence field No. 69?
(113) What the cost at price of posts and labor in your county?
(114) Cost of best wire fence 5 wires high?
(115) Name some diseases of chickens (Farmers bulletin 41 and 141).
(116) What does gallon of milk weigh? of water?
(117) Butter fat makes value in milk—How much in gallon?
(118) Which season best for setting out trees? (Bulletin 42).
(119) Get corn from 3 farms—test the corn (Farmers bulletin 253).
(120) What plants are legumes? What trees?
(121) How make test for your land?
(122) How inoculate land?
(123) How and what clover may be grown?

(124) Of what value are silos?
(125) Will it pay to plow corn 5 to 8 times?
(126) What soil is dark? What makes some red, others yellow?
(127) How many oat stalks from one root?
(128) Flowers are staminate and pistillate. What are pollen and silk?
(129) How many grains on a good head of wheat?
(130) Get growing clover plant—any nodules or tubercles?
(131) What do these tubercles contain and where do they get it?
(132) Plant food and fertilizers.
(133) Experiments in germination.
(134) When plant apple, cherry, plum and pear trees? How?
(135) Planting a wood-lot on farm.
(136) Rotation of crops.
(137) Spraying—Spraying mixtures.
(138) Grafting and budding.
(139) Value of leaves.
(140) The ugly but useful toad.
(141) Outline of Animal Kingdom.
(142) Value of birds to farmer. Game birds.
(143) Best farm fences—variety of material.
(144) Water supply for the farmer and his stock.
(145) Beautifying home and school grounds.
(146) Farmers' tools.
(147) Crop records for corn, wheat, chickens and eggs, cattle, etc.
(148) Juvenile Agricultural Societies.
(149) Food for the family. What variety needed?
(150) Agriculture in West Virginia.

## BOOKKEEPING.

Bookkeeping should be taught during the eighth year in connection with the arithmetic and language. No separate recitation should be provided for bookkeeping. All business forms should be made language lessons, such as orders, receipts, notes, drafts, business letters, applications for positions, etc. The accounts should be kept in good form and language but all mathematical work should be correlated with the arithmetic. To facilitate this

correlation the teacher should have on his desk a good text on commercial arithmetic and an additional text or two on bookkeeping from which to get exercises and problems for the pupils. Both arithmetic and bookkeeping should furnish the opportunity to have the pupil bring in exercises and problems of the business interests in the community in which the school is found.

## SPELLING.

Spelling should begin the first year after the children have learned to recognize some words at sight and to know their meanings. There should be no spelling book used until the fourth year but the spelling should not be left to incidental learning. The children should be guarded against spelling any words incorrectly. The children, as soon as they begin to write, should begin to make word lists of those used and keep them at hand for reference and use the word lists as older persons would use a dictionary. Some of the words in reading lessons and elsewhere should be spelled, but drill on word lists except the words in actual use by child in its written work should be avoided.

To acquire ease and surety in the spelling of words they must be learned in situations in which they will be employed, that is in the written work of the child. The chief problem for the teacher will be to provide the adequate number of situations and to select for emphasis the words often misspelled.

In learning to spell the important thing is to have the child sense the word clearly, that is, to get a clear image of the word it spells. Most children sense the word or get a visual image of the word by looking at it. However, some children sense the words or get the images of words by motor, auditory or vocal activity. Do not try to have your pupils learn to spell by sensing the words or forming the images by the use of one sense alone. Have the children see the words clearly, hear the words distinctly, spell orally and pronounce the words correctly, and write the words legibly. Provide for variety in spelling.

Practice phonetic spelling to get the pronunciation but not to get the characters, letters of the words. Sound easy words first as wholes, then separate slowly and gradually into simple elementary sounds. Teach whole words first, then the elementary sounds and finally introduce the diacritical marks.

Begin the use of the spelling book in the fourth year and em-

phasize the similarity of the spelling of certain words and of words pronounced alike but spelled differently. Practice on the words in common use that are often misspelled. Accept no written work in which a word is misspelled. Teach the children to criticise their own spelling and to form the habit of using reference books, dictionaries, etc., to spell all doubtful words. Provide for spelling contests in your school.

After the spelling book has been introduced, teach the ordinary rules for spelling, the rule for final y, e, ie; for the endings, ce, ge, oe, ee, etc. Teach the rule for doubling the final consonant and emphasize the exceptions to the several rules taught.

Correlate the spelling with language work and make some study of word building, word analysis, prefixes, and suffixes.

## PHYSIOLOGY, HYGIENE, ALCOHOLICS AND NARCOTICS.

The work of the first years in this study should be almost exclusively pertaining to Hygiene, with the purpose of securing health and right habits of living in the child, rather than much formal knowledge of anatomy of physiology. It should not be made an attempt to crowd immature minds with dead and meaningless names and terms and lists, but should be an effort to teach the child to live, in his work and play and rest, under right conditions, both as to his external surroundings and as to the internal conditions of his mind and body. A weak, anaemic, stooping child who knows physiology is not much credit to any school; a strong, healthy and vigorous child who **lives** hygienically is a fine product of any system of education.

A great deal of the earlier work may and should be incidental, —growing out, of and connected with, many other lessons and events of the school. Even when it begins to be more formal it should be closely correlated with language and other work. In the first few years there should be no regular recitations at stated periods. Later on, however, even before the text book is regularly used by the pupils, there should be something more of regularity and formality in the work, with regular recitations on work previously given orally by the teacher. It is suggested that no text book be used before the eighth year's work, and then only an intermediate text be used: the earlier classes would best use no text-book at all, and the pupil of this age is not mature enough for an advanced book. The teacher, however, should very carefully base her work on one or several elementary and advanced texts.

NOTE.—In schools where the daily programme is unduly crowded, the plan of alteration, by which this subject would only be taught to certain classes in alternate years, may be used. For instance, instead of having a fifth and sixth years' class each year, these two might be combined and only have the classes study the work in alternate years.

### First Year.

### Position, Etc.

The teacher should exercise continual care over the matter of

the seating of the children, for it will necessarily happen that in many schools the seating is but illy adapted to the children in attendance. Both seats and desks are often too high or too low, causing present discomfort and often future disability or ailment. The judicious assignment of seats by the teacher, some little arrangement for a foot rest for the child, something to raise his seat higher, frequent change of work,—these and similar devices on the part of the teacher will do much to correct these faulty conditions. The time needed for these things is sometimes far more profitably spent than it would be in hearing a class recite.

### Habits and Conditions Affecting the Skin.

Pupils should be required to keep their hands and faces clean. Have a basin at the school house and require those who are dirty to wash themselves. Tell in a simple way that dirt may be full of poisonous substances, and it may thus cause disease. Warn them not to touch any dirty person or thing. Speak of the danger of letting the dirt remain under the finger nails.

### The Respiration.

The teacher should never forget the ventilation of the school room. Without pure air, no room is in fit condition for instruction. Make it a rule, during weather when fires are maintained, to step out occasionally and breathe the fresh air out of doors. This will enable you to detect the foul air of the room, which otherwise might pass unnoticed. Try to secure fresh air so that drafts will not fall on any one, but have fresh air by all means. If no other way is available, once in a while suspend recitations and let the children play, or have drills, exercises, etc., while the room is being ventilated thoroughly through open windows and doors.

### The Muscular System, Circulation, Etc.

In every possible way encourage pupils to moderate, regular exercise. Do not be afraid to take part in active games with them. Do not allow the child who is indisposed towards physical effort to remain in the house at recess, except of course where the health of the child is concerned. Speak of the danger of too violent or too long-continued exercise,—as for instance when a girl tries to jump the rope one hundred times.

### The Alimentary System and Nutrition.

The teeth. Care of the teeth. Cleaning them. A perfectly clean tooth can not decay. Teach the danger of eating foods too hot or too cold, and show how this may crack the enamel. Coarse dry foods such as old bread strengthen the teeth and the jaws. Speak of the need of having cavities in the teeth attended to by the dentist at once. Much later suffering and inconvenience saved by the early care of the teeth. Have some good dentist talk to the children about the care of the teeth.

### Special Sense Organs, Etc.

Care of the eyes. The teacher should be very careful as to all blackboard work that it may not strain the eyes of the children. The lighting of the room should be very carefully attended to. All light should come from the rear or the left side. Do not require pupils to sit so that they face the glare of a strong light, the reflection of the sun from snow, etc.

## Second Year.

### Position, Etc.

Children should be taught at school, if they have not learned it elsewhere, to stand properly. The head should be held up, and slightly back; the chin should be drawn in and the chest thrown up and out. Occasionally at recess and at other proper times have a little drill in proper standing. Call attention to the soldier's bearing for the pupil's emulation. Show the children a gnarled and twisted tree, and call attention to the fact that this condition was caused by the tree's being bent or twisted when it was young. Teach children to stand squarely on both feet, though the feet need not always be in a symmetrical position side by side. Avoid a slouching position in which the weight falls principally on one leg.

### Habits and Conditions Affecting the Skin.

Teach the proper conditions that should surround the skin,—dryness, warmth, uniformity of temperature, etc. Do not allow pupils to sit in a room with damp clothing on. Emphasize the danger in getting the feet cold and wet by wading in snow, water,

etc. The skin should be kept dry if possible. Give some simple talks about proper clothing. It is unwise to wrap up too much, but one should wear sufficient clothing. The teacher can not control these things altogether; but if the child is made to think rightly about them, it will finally affect the parents more or less. In winter the teacher must never neglect the heating of the room. Do not, for the sake of discipline or other reasons, forbid children to warm and dry themselves at the stove. Sudden changes of temperature are dangerous. Caution pupils against cooling off too rapidly when warm from exercise. Avoid drafts in ventilating. Caution against sitting on, or leaning against, cold objects.

### The Respiration.

Occasionally take a little time to teach some deep breathing exercises. Let each pupil expel all the air he can from his lungs, then breathe in as much as he can and see how long he can retain it. These exercises, in connection with proper position in sitting and standing, will noticeably develop the circumference of a person's chest, indicating a growth and strengthening of the lungs.

### The Heart and Circulation.

Give some little talks about the heart. The heart needs ample rest. The only rest it gets is between beats, so that it gets scarcely any rest at all except when the beats are slow; therfore a person needs much sleep, for then the beats are slowest. This is one reason why children should not remain up late at nights so as to lose sleep. It is a reason, also, why they should not smoke cigarettes, or use anything that stimulates the heart. Any drink containing alcohol has this effect, and therefore is bad for the heart.

### The Muscular System.

Teach the value and honor of physical strength, when properly used. This can only be secured through proper habits of eating and drinking, exercise in the sunlight and air, proper rest, etc.

### The Alimentary System and Nutrition.

Proper foods. Value of cereals, bread, meat, vegetables, eggs,

milk, etc. Illustrate by the simplicity of the food of some of the strongest animals. Pure water is nature's own drink, and by far the best and safest beverage.

Improper foods. Underdone and too fresh bread, pastries, pies, cakes, candies, rich preserves, etc. Dwell at length on the danger of eating cheap and highly colored candies,—the colors used are often poisonous. Tea, coffee, etc., are not best for children. Many of the drinks sold at the soda fountains are not safe.

### The Special Sense Organs.

The eyes. Instruct children as to proper care of the eyes at home, and elsewhere. Should be kept clean, by washing carefully. Best not to rub them much. Great care as to the use of towels used by others. Danger of trachoma and other contagious diseases of the eye. Foreign particles should be carefully removed at once. Get a physician to show you how to turn the lid back over a pencil for the purpose of removing particles of dirt from the eye. The eye should be held carefully closed until the particle is removed—do not rub it.

## Third Year.

### Habits of Position, Etc.

The sitting posture of the child is even more important than that of standing. Even when properly seated his posture may be bad. Head, chest, etc., should be much the same as for standing. When the child is at work it is scarcely possible or desirable to require a rigid or stiff position; but even then he should not be allowed to become slouchy, or to stoop too much over his work, or to lean over too much to one side; or to slide far down in his seat, so as to sit on the small of his back. The teacher should bestow a considerable amount of attention on this matter.

### The Skin.

Simple talks on the structure of the skin,—layers, scales, pores, etc. Many animals shed whole skin, or parts of it, at one time; man sheds his little by little at all times. Make this the subject of a lesson on the need of bathing and cleanliness. The whole body needs bathing at proper intervals. Value of a good rubbing

after bathing, or even with the dry skin. Need of frequent changes of clothing. The night's clothing should not be that worn during the day.

### The Respiration.

Give some simple instructions about the need of pure air at all times. Show or tell about the plant that grows in a cellar or dark place, and note how it strives to reach the sunlight and fresh air. Make strong the necessity of sleeping in well ventilated rooms at night. Night air is falsely thought to be dangerous,—the night air out of doors is not nearly so likely to be harmful as the night air of a poorly aired bed-room or living room. Tell how lamps contaminate the air (one lamp takes as much oxygen as three persons), also stoves. Dust is always bad to be breathed: for the sake of keeping down that of the school room it is well to have the floors oiled. Blackboards and erasers should always be cleaned outside of school hours, so that the lungs will not become filled with the unwholesome dust.

### The Heart and Circulation.

Review the work of this topic from the preceding year. Emphasize the effect of alcoholic and narcotic substances on the heart. Speak of the effect of anger and other intense passions on the heart; it is therefore best for a person to be cheerful and happy. Anything that deranges the heart will soon affect all other organs.

### The Muscular System.

Identify muscle with the lean meat of animals. Explain why the ox is so strong,—the great muscular system it possesses. How does it secure this. Tobacco stunts the growth of the muscles of the child. Alcohol may produce fatty tissue but does not produce muscle. The proper desire for strength, and admiration of it, may become the motive for many good habits in the boy, or girl. Give some thought to working out this in practice in your room.

### The Alimentary System and Nutrition.

Right habits as to taking food. Do not eat too often, or irregu-

larly at all sorts of odd times. Better to eat at meal times only. Missing meals for play, or other reasons, is a bad practice. Exercise care as to eating before going to bed. Eat very slowly. Emphasize the necessity of proper mastication, illustrating by the ruminating animals. Poor mastication is the first step towards dyspepsia, and the cause of much of it. Do not wash food down with water. Best to drink before eating, and then no more water during the meal. Evil effects of stimulating the appetite with alcoholic drinks, etc. When a person is not hungry that is nature's way of indicating that he needs no food.

### The Bones and Framework of the Body.

Simple talks as to the general anatomy of the body. Need of a framework to support any structure, a house, for instance. Strength and rigidity needed in the materials of the framework. The bones in youth and old age. Need of proper position of the body for its right development.

### Special Sense Organs.

The ears. Be careful not to pick with any hard substance. Never put pins or such objects in the ear. The great danger in boxing the ear. Never allow a cold draft to blow on the ear. A bad cold may injure the ear through the inflammation extending to it. This is another reason for trying to avoid bad colds, if possible.

## Fourth Year.

### Habits of Position, Motion, Etc.

Children should be required to move briskly and with energy, but without too much noise or seeming haste. Teach them to walk without striking the floor with the heel too loudly. Encourage games that require vigorous effort, without imposing overexertion or serious strain. Review and emphasize what has been said hitherto about proper positions and postures.

### The Skin.

Physiology of the skin. Simple talks about its functions and uses. Again make this the subject of lessons on cleanliness. Per-

spiration and its use. Why a dirty skin can not perform its work properly. Explain how poisonous products of perspiration may accumulate in the clothing and render it unfit for wear. Clothing may be purified by being hung in the sun. Exercise out in the sunlight and fresh air tones up the skin and makes it perform its work better. Injurious effects of powders, lotions, and such preparations, by clogging pores, even if they contain no poisonous ingredients. Alcohol harms the skin by causing a permanent enlargement of the small blood vessels that supply the skin,—this is why the drunkard's nose is red.

### The Lungs and Respiration.

Give some simple talks on the anatomy of the lungs and air passages. Have the children observe the "lights" of some animal when there is butchering in the neighborhood or at home. Call especial attention to the wonderful delicacy of their structures, and show how it may be injured by cigarette smoking or by drinking alcoholic drinks. Follow some good text book on this subject, and ask some good physician to talk to the school about it.

### The Heart and Circulation.

Teach in a simple way the anatomy of the heart. At butchering time get a heart and show the different cavities and openings, etc. Simplify the work of some large text and present it to the class orally in one or more lessons. Emphasize the wonderful work done by the heart, and call attention to the extra task alcohol and tobacco give it to do.

### The Muscular System.

Review and emphasize important points hitherto presented under this heading. Teach some simple physical exercises. Show how a boy may measure the circumference of his arm, and after a course of exercises with dumbbells, indian clubs, etc., by another measurement he may show its growth.

### The Digestive System and Nutrition.

Present in a simple way some of the main facts relating to the digestive system. The various parts. The teeth and their struc-

ture. The passage to the stomach. The stomach. The intestines. The salivary glands, pancreas, liver, etc. Make this the basis of more work, incidentally, in hygiene. Carefully follow some good text-book but present the work orally.

### The Framework and Bones.

Location and names of some of the most important bones, the different bony cavities, head, chest, etc. Structure of the bone, hard outside surface, marrow, etc. The constituents of bony tissue.

### The Special Sense Organs.

Different ways in which the eyes may be strained when in use. Reading lying down. A light that is too dim, too bright, or flickering and unsteady. Reading in the twilight an especially easy time to strain the eyes because the growing dimness may not be noticed. Do not use the eyes when greatly fatigued. Many kinds of fancy work are very hard on the eyes. Sewing on dark colors, especially at night. Great value of good eyesight.

### The Nervous System and its Parts.

General parts,—brain, spinal cord, nerves, sympathetic system. General needs and use of nervous system to bring various parts into proper relation with each other.

## Fifth Year.

### The Skin.

Danger of contagious diseases. Ask some physician to give a talk on this subject. Be sure to prevent from coming to school all persons who may have been exposed to measles, small pox, etc. Make inquiry of some medical man as to the length of time during which there is danger both before and after contagion, or breaking out. Mention the danger of using a towel that has been used by a promiscuous crowd or people. Ascertain the symptoms of common ailments of the skin in order that you may recognize them if they should occur in the school.

### The Lungs and Respiration, and the Circulatory System.

Give some simple work on the physiology of the lungs, or if

possible have some doctor discuss the matter before the school. Explain in simple terms how the blood is purified in the lungs. Show the importance of this to the whole system and make it the basis of more work in hygiene as pertaining to fresh air, etc. Repeat the work relating to alcoholics and narcotics.

### The Digestive System and Nutrition.

Digestion. The mouth and its part in digestion. Necessity of proper mastication and insalivation. How chewing gum may overtax the salivary glands and thus injure digestion. The functions of the stomach. Follow some good text in this throughout. Emphasize points of hygiene wherever possible. Effects of alcohol on the stomach; also the effects of excessive smoking.

### The Muscular System.

Proper foods to build up muscle. Candies, sweets, pastry, etc., will not make muscle. Cereals, vegtables, eggs, soups, meats, cheese, milk, will. Athletes must be very careful as to their diet; boys who wish to be strong must also exercise some care in this matter. Athletes in training are forbidden to use tobacco or alcoholic liquors, children who wish to be strong must follow the same rule. Such things greatly diminish strength and endurance.

### The Bones and Framework.

Food needed for the bones: meats, milk, whole wheat bread, etc. Strong bones are the foundation of a strong constitution.

### The Special Sense Organs.

The nose. Use of the sense of smell. Colds, leading to catarrh, most likely to be caused by overeating and spending too much time in impure, overheated air. Keeping the skin clean and healthy, with plenty of exercise in the sunlight and open air are the best preventives.

### The Brain and Nervous System.

The hygiene of the brain and nervous system. Good, plain food, fresh air, simple habits of life, plenty of exercise and rest make a strong brain and nervous system.

Simple talks on the anatomy of the brain and nervous system, and various parts. Simple talks about their functions. Follow some good text.

## The Sixth Year.

### The Skin and the Muscular System.

Treatment of wounds, cuts, burns, etc. These should be kept carefully cleaned and covered. Some mild antiseptic solution valuable for washing. Consult some doctor as to the general subject. Especially avoid letting a sore or diseased part of a person's skin touch a cut or other sore place on that of another.

### The Respiratory System.

Give something more about the hygiene of the lungs. The treatment may be a little fuller and deeper than in the earlier work on this topic. The need of pure air: since all air is purified by sunlight the need of sunlight in all rooms, especially living and sleeping rooms. Have pupils tie a tight band around a plant and notice the result in a few days. Compare the effect of tight clothing, corsets, etc, on people.

### The Circulatory System.

Give something about the anatomy and physiology of the circulatory system. Follow some good text for diagrams, illustrations, etc. Go rather fully into the uses of the blood; how essential it it is that the blood should be pure; how it can not be purified by drugs, medicine, etc., but only by pure air, proper food, right habits of living, etc. It might be well for an object lesson some day to close up all the windows and fresh air openings for a few minutes, and let the pupils observe how soon they begin to get stupid and drowsy,—because the blood is poisoned for lack of fresh air to purify it. Speak briefly of the lymphatics.

### The Muscular System.

Brief and simple work on the anatomy and physiology of the muscles. Teach the names and location of a few important muscles, as the biceps, triceps, deltoid, etc. Various kinds of muscles, uses, etc.

### Digestion and Nutrition.

Review the previous work on this topic. Take up in a simple way the digestive functions of the intestines. The uses of the pancreatic juice and the bile. The anatomy of these various organs. Emphasize all possible points of hygiene. How these organs are affected by alcohol.

### The Framework and Bones.

Review lessons on the proper positions for sitting, standing, reclining, working, etc. Proper position during sleep. To keep the body straight when young is the only way to have a good physique when old. Results of improper clothing, corsets, etc. Show how even a tight vest may compress the walls of the chest. The effect of high heeled shoes in breaking down the wonderful arch of the foot. The evils of compressing the foot with tight shoes.

### The Brain and Nervous System.

The great blood supply of the brain. The effect of alcohol on the brain, being immediately taken there through the blood. Why the drunkard loses control of his movements, faculties, etc. The effect of various narcotics on the delicate tissues of the brain and nerves. Give several lessons on these topics at opportune times.

## Seventh Year.

### The Skin.

The outgrowths and modifications of the skin,—nails, hair, etc. Nails should be trimmed frequently, but not too close. The skin around the base should be pushed back often with a blunt instrument to prevent hang-nails. Never bite the nails. Keep them clean.

Treatment of the scalp and hair. Occasional washing, good rubbings and brushings are desirable. Care as to the use of preparations. Many hair dyes contain poisons.

### The Respiratory System.

Some special work about the danger of infection with the germs

of consumption and other pulmonary diseases. Get a good physician to discuss this matter. The subject of taking care of the sputum of the sick. Never allow pupils to spit on the floor. Pupils with a cough that hangs on for a long time would best be excluded from school for their own sake as well as that of other pupils. The effect of alcohol. Drunkards succumb readily to pneumonia and other diseases of the air passages. Fresh air and sunlight are the best cure and preventive of lung diseases.

### The Circulatory System.

Effect of tobacco on the heart. Care of wounds to prevent blood poison. Danger of tetanus from infected wounds,—especially the danger of this dread disease from wounds caused by accidents with fireworks at the Fourth of July and other times. All wounds should be kept absolutely clean. Danger from excessive loss of blood from wounds. Teach pupils to make a simple tourniquet with a handkerchief and stick. It may save a life some time when an artery is cut.

### The Muscular System.

Review lessons on the effect of alcoholic beverages and narcotics. Great strength and endurance are incompatible with the use of these things. Many patent medicines contain alcohol and are therefore dangerous.

### The Digestive System.

Diseases. Dyspepsia, indigestion, typhoid fever, cholera, etc. Necessity of having pure water to avoid intestinal disturbances. Danger of eating unripe or overripe fruits, tainted meats, etc.

### The Framework and Bones.

The general hygiene of the bones. Right habits of living necessary if one would have good strong bones. Emphasize again the importance of proper food. Diseases and injuries of bones,—felons, etc. Broken bones and their treatment. Follow some good text with reference to these things.

### The Special Sense Organs.

Simple talks about the various organs of the special senses, their uses, anatomy, etc. The simple presentation of the anatomy of the eye and ear. Repeat the lessons about the care of these.

### The Brain and Nervous System.

Value of habits of study in building up a strong brain and strong intellect. It is in the brain that we find the greatest difference between man and the lower animals.

### Eighth Year.

Where pupils have had anything like a thorough training in the work this far they should be able to complete some sort of intermediate or elementary text book in about a half year's work. As stated elsewhere, pupils at this stage are not sufficiently developed for a complete text-book, and one of an intermediate type would best be used.

The work up to this point has been mostly hygiene. The work of the eighth year should also emphasize hygiene, for that is to the pupil by far the most useful part of the subject. Still a considerable amount of more or less formal anatomy and physiology may be given, both for the light it throws on the instruction in hygiene, and for the sake of the subjects themselves. Try above all, however, to make the instruction strong and interesting,—vitally connected with the life the children live. Wherever possible let children see the thing itself, as for instance a heart, rather than be content with merely reading about it. Try to arrange some parts of the study to come at times when butchering is going on in the neighborhood, and make actual studies of the anatomy and organs of domestic animals. In every case, as far as possible, try to see that the word form of the name is very intimately associated in the mind of the pupil with the image and idea of the thing which the name represents.

Emphasize the parts relating to the effects of alcohol and narcotics. Devote the greater part of your time to the parts of the subjects which you deem most important, and to those which the pupils know least of. Remember that the best use you can make of a part of the time in each recitation is in going over and ex-

plaining the coming lesson. Never assign the lesson by merely saying "take the next two pages." Instead carefully go over the assignment, explaining what points are most important, clearing up points the child may not readily understand, giving little suggestive outlines, etc., teaching the child how to study. This implies some preparation on the part of the teacher, but successful teaching will come in no other way.

### Ninth or Tenth Year.

Some good advanced text book may be used for this work, which will, in almost all cases, be the regular county adoption. The teacher will do well however to have other texts for personal use, and it might be well to have a large work, as to the selection of which you might ask the advice of a physician. Oftentimes a physician will loan a teacher such a work for reading.

Read over the work given under this subject heretofore in the Manual for suggestions, particuarly that relating to the eighth year. Try as far as possible to perform all experiments and other objective work suggested in your own or other texts.

## MORALS AND MANNERS.

Character has a physical basis and this fact should be recognized early in life by the child. The teaching of morals and manners should be so directed that the child would realize that its physical welfare will be benefited, and that it pays to do right for economic and social reasons. It should be made clear to children that their usefulness, influence, and happiness in life will depend very largely on the character they will build.

There are two distinct periods in character building that the teacher must recognize if any desirable results are to be attained. The period of childhood from six to about twelve or thirteen and the period of youth from twelve or thirteen to about twenty years or later must be clearly distinguished. In childhood the instincts are individualistic. The appeal must be made only in so far as the child can see a personal benefit to be derived. All other teaching must be based on recognized and accepted authority. The important thing in chidhood is to have the child act out every moral idea and precept that is to be learned. A properly organized school furnishes very excellent situations for the child to do what is to be learned. With the child even more than with the youth the doing is the learning.

As soon as the child attains to the age of youth a very different manner of treatment must be accorded him. His social instincts now make it possible for him to become morally whatever his environment will produce in him. He now has a natural disposition to do and to live for other people. A teacher should not only recognize this new sense but he must also recognize that the youth has a keen sense of the respect, reverence, and confidence that he is worthy of. He should be treated now as one whose opinions and behaviour are of real worth to other people.

Some of the things that the child should learn are cleanliness, neatness, promptness, regularity and obedience. It is also well that the child should learn that it should pay for a benefit before it enjoys it and that it should take pain before pleasure when the one follows the other. Teach by incidents, illustrations, and stories well told to impress the idea and to secure the proper response in conduct. Show that kindness, honesty and truthfulness have their sure reward. Teach that industry, politeness, and respect

for other people are desirable virtues and that idleness, rudeness, and irreverence are vices to be avoided.

Teach the youth to see clearly the need and value of institutions, of government and of society. Use biography, history, and literature to show how civilization depends upon the cooperation of human beings of all classes and ranks of life. Give the youth large opportunity to act out his moral ideas and place responsibility upon him for which he is to account in a reasonable length of time. Keep in mind in dealing with both children and youth that prevention and not reformation is the school's function. The time to act on the part of the teacher is before the impulse and instinct have resulted in undesirable behavior.

# COURSES OF STUDY

FOR THE

# HIGH SCHOOLS

OF

# WEST VIRGINIA

## INTRODUCTION.

An Act of the Legislature of 1908 creating a State Board of Education provides that the Board shall constitute a committee on program of studies, and shall prescribe a program of studies for the public schools of the State including the primary, graded, intermediate, and high schools. In compliance with the act referred to above the State Board of Education has prepared the first official program of studies for the high schools of West Virginia.

This first program is tentative in its nature and will be revised from time to time to meet more fully the needs of the schools of the State as these needs become better known and as changing conditions may require. The total number of units offered by the four year type program from which the student is to select sixteen units as his curriculum is about thirty-six units distributed as follows:

| | |
|---|---|
| English | 4 |
| History | 4 |
| Science | 6 |
| Foreign Languages | 9 |
| Mathematics | 3 |
| Industrial and Commercial subjects | 8 |
| Art | 2 |

The aim of the program is to fix, in a flexible way, minimum and maximum standards for admission and graduation, prescribed and elective studies, time allotment of studies, etc. The type programs are to suggest the range and organization of studies that may be offered in high schools. The outlines of studies are in many cases, brief but will aid teachers in selecting and organizing the subject matter for pupils.

M. P. SHAWKEY, Chairman.
U. S. FLEMING, Secretary.
J. N. DEAHL,
I. B. BUSH,
J. D. GARRISON,
C. R. MURRAY.

## HIGH SCHOOL PROGRAMS OF STUDIES.

### The Aim of the High School.

The purpose of a high school is to afford to boys and girls an opportunity to prepare themselves more fully for life than the elementary school will permit. The three or four years immediately following the elementary school period have been found to be unsuccessful for those who leave school to enter upon life duties. There is a waste of energy and time that neither the state nor society can afford. The remedy is to keep the pupils in a proper school. This period of youth is also the one in which character is formed. It is even of more importance for the boys and girls to be in school during adolescence than in the elementary school of childhood. The problem is to furnish the right kind of school. The organization and proper aim of studies in the high school must make it possible for a larger number of boys and girls to pursue its course with profit to themselves. To this end the school must impart knowledge to secure efficiency, develop interest to secure motive and effort, encourage and instill culture to secure balance and poise of mind.

The problem of the high school is to find subjects for study that pupils can pursue with profit. The subjects of study must be suited or adapted to the capacity of the pupil or no knowledge or interest or culture will be acquired. The value of the study depends upon its adaptation to the pupil. The knowledge of most value to the pupil is that which he can most thoroughly acquire; the interest that enriches life most is furnished in largest measure by the school subjects that the pupil can best comprehend and understand; the culture that refines and ennobles life most is obtained in the pursuit of those subjects in which the pupil can get the clearest insight of the world in which he lives. The cultured person of the twentieth century is the one who can meet the situations in life, the problems of our present civilization, with keen discrimination, large tolerance, and effective service.

### ADMISSION REQUIREMENTS.

The requirements for admission to the high school should be flexible that no one may be deprived of educational opportunity. The minimum requirement should be that the pupil is prepared or

able to pursue some one or more of the subjects in the high school with profit to himself. The maximum should be the successful completion of an elementary school program of studies or its equivalent.

## REQUIREMENTS FOR GRADUATION.

There should be both a minimum and a maximum standard for graduation from a high school. The diploma should be awarded for the completion of eight, twelve, or sixteen units in the program of studies, in a two year, three year, or four year high school respectively, at four different grades, as follows:

(1) A diploma awarded on a general average of 65%, minimum grade 60%.

(2) A diploma **with credit** awarded on a general average of 75%, minimum grade 70%.

(3) A diploma **with honor** awarded on a general average of 80%, minimum grade 75%.

(4) A diploma **with highest honor** awarded on a general average of 90%, minimum grade 80%.

## STANDARD HIGH SCHOOLS.

A standard high school is one offering not fewer than twenty-two units of which sixteen units are required for graduation. Four years of thirty-six weeks each are required for the completion of the sixteen units. There should be not fewer than four teachers, and the teaching, the teaching corps, and the equipment of the school should meet the regulations indicated below.

There are many advantages in having the high school year to consist of thirty-six weeks, even if the grades do not continue for the same length of time. However, a high school can organize its work for a twenty-four week or thirty-six week year so that its pupils may finish two year program of thirty-six weeks in three years or less; a three year program may be finished in about four years or less; a four year program in six years or less time.

The character of the work done in a small high school in which the teaching force is not large may be improved by alternating some of the subjects. For example, if but one unit of mathematics or one unit of biology, or botany, or physics, etc., is offered it may be given every other year. A plan of this kind may be provided

for in organizing the program of studies and the daily schedule of recitations. This will enable teachers to keep the number of their daily recitations within the limit of five or six per day and thereby do better teaching.

## HIGH SCHOOL REGULATIONS.

1. All programs of studies should be on the unit basis of eighteen or thirty-six week courses.

2. No changes in the organization of courses should be made, that would operate unfavorably to pupils already in high schools.

3. No teacher should conduct more than five, at most six, recitations per day. The recitation periods should be at least forty minutes in length.

4. High school teachers should be graduates of standard colleges or their equivalent and have adequate professional education.

5. The equipment of high schools should be such in libraries, laboratories, etc., as to offer their courses with profit to their pupils.

6. No subject should be offered for less than one half year.

7. Algebra and Geometry should not be offered for more than one and one-half years each.

8. No science should be offered for less than one full year.

9. No foreign language should be offered for less than two full years and no diploma credit should be given for less than one year.

10. In offering history in the high school preference should be given in the following order: American History, English History, Mediaeval History, Ancient History.

11. English should be studied during the entire period of four, three, two years, respectively, with at least four recitation periods per week.

12. All proposed changes in high school program of studies should be submitted to the State Board of Education for approval.

## PRESCRIBED UNITS.

A unit represents the work done in a subject in a high school in thirty-six weeks of five recitations per week, with recitations of

at least forty minutes in length; half a unit would represent eighteen weeks work. The amount of work necessary to secure a unit credit for graduation will be indicated in the detailed statement of subjects.

Not fewer than eight units nor more than ten of the sixteen necessary for graduation from a four year high school may be prescribed. These may be selected from the following groups of subjects:

Minimum number of prescribed units (8).

| | |
|---|---|
| English | 4 Units. |
| Science | 2 " |
| History, (American History and Civics and English History) | 2 " |
| Industrial Subjects | 2 " |

Maximum number of prescribed units (10).

| | |
|---|---|
| English | 4 Units |
| Mathematics, (Algebra 1, Geometry 1) | 2 " |
| Latin or German | 2 " |
| Science | 2 " |
| History, (American History and Civics and English History) | 2 " |
| Industrial Subjects | 2 " |

## ELECTIVE UNITS.

The remaining six or more units necessary for graduation may be selected from the following groups of subjects:

| | |
|---|---|
| Mathematics | 1 more unit. |
| Foreign Languages, (2 Latin, 1 German, 2 French) | 2 or 3 more units. |
| Science | 2 more units. |
| History | 2 more units. |
| Industrial Subjects | 3 more units. |
| Art, (Music, Drawing) | 2 units. |

## REQUIREMENTS FOR THREE YEAR HIGH SCHOOL.

There shall be not more than eight units of the twelve neces-

sary for graduation prescribed. These may be selected from the following groups of subjects:

English .....3 Units.
Mathematics .....1 Unit.
History .....2 Units.
Science .....2 "
Industrial Subjects .....2 "

The remaining four electives may be chosen from the following subjects:

Mathematics .....2 more units.
Industrial Subjects .....2 more units.
Latin or German .....3 units.
History .....1 more unit.
Science .....1 more unit.
Art .....2 units.

## REQUIREMENTS FOR TWO YEAR HIGH SCHOOLS.

There shall be not more than five units prescribed to be selected from the following:

English .....2 Units.
Mathematics .....1 Unit.
History .....1 "
Science .....1 "
Industrial Subjects .....1 "

The electives may be chosen from the following subjects:

Mathematics .....1 more unit.
Latin .....2 units.
Science .....1 more unit.
Industrial Subjects .....1 " "
History .....1 " "
Art .....1 unit.

## TYPE PROGRAM.

### Four Year Program.
### First Year.

| First Semester. | Second Semester. |
|---|---|
| English 4 | English 4. |
| Algebra 5 | Algebra 5 |
| Biology 5 (Elementary Botany, Geology and Physiology) | Biology 5 (Elementary Botany, Geology and Physiology) |
| History 5 | History 5 |
| Latin or German or French 5 | Latin or German or French 5 |
| Commercial Arithmetic 4 | Commercial Geography 4 |
| Typewriting 1 | Typewriting 1 |
| Drawing 1 | Drawing 1 |
| Music 1 | Music 1 |

### Second Year.

| | |
|---|---|
| English 4 | English 4 |
| Geometry 5 | Geometry 5 |
| Botany 5 | Botany 5 |
| History 5 | History 5 |
| Physiography 5 (Physical Geography and Elementary Geology) | Physiography 5 (Physical Geography and Elementary Geology) |
| Latin or German or French 5 | Latin or German or French 5 |
| Bookkeeping 4 | Bookkeeping 4 |
| Industrial History 1 | Industrial History 1 |
| Drawing 1 | Drawing 1 |
| Music 1 | Music 1 |

### Third Year.

| | |
|---|---|
| English 4 | English 4 |
| Algebra 5 | Geometry 5 |
| Chemistry 5 | Chemistry 5 |
| History 5 | History 5 |
| Latin or German or French 5 | Latin or German or French 5 |
| Designing 3 | Designing 3 |
| Stenography 4 | Stenography 4 |
| Typewriting 1 | Typewriting 1 |
| Drawing 1 | Drawing 1 |
| Music 1 | Music 1 |

**Fourth Year.**

English 4
Physics 5
Agriculture 5
American History and Civics 5
Domestic Science and Art 5
Latin or German or French 5
Mechanical Drawing 3
Manual Training 4
Commercial Law 4
Zoology 4
Drawing 1
Music 1

English 4
Physics 5
Agriculture 5
American History and Civics 5
Domestic Science and Art 5
Latin or German or French 5
Mechanical Drawing 3
Manual Training 4
Business Correspondence and Stenography 4
Zoology 4
Drawing 1
Music 1

**Three Year Program.**
**First Year.**

First Semester.
English 5
Algebra 5
Biology 5
History 5
Latin or German 5
Commercial Arithmetic 4
Typewriting 1
Drawing 1
Music 1

Second Semester.
Algebra 5
English 5
Biology 5
History 5
Latin or German 5
Commercial Geography 4
Typewriting 1
Drawing 1
Music 1

**Second Year.**

English 5
Geometry 5
Physiography 5
History 5
Chemistry 5
Latin or German 5
Industrial History 1
Bookkeeping 4
Drawing 1
Music 1

English 5
Geometry 5
Physiography 5
History 5
Chemistry 5
Latin or German 5
Industrial History 1
Bookkeeping 4
Drawing 1
Music 1

### Third Year.

English 5
Algebra 5
Physics 5
History 5
Agriculture 5
Domestic Science and Art 5
Latin or German 5
Stenography 4
Typewriting 1
Drawing 1
Music 1

English 5
Algebra 5
Physics 5
History 5
Agriculture 5
Domestic Science and Art 5
Latin or German 5
Stenography 4
Typewriting 1
Drawing 1
Music 1

## Two Year Program.

### First Year.

First Semester.
English 5
Algebra 5
Biology 5
History 5
Latin 5
Commercial Arithmetic 4
Typewriting 1
Drawing 1
Music 1

Second Semester.
English 5
Algebra 5
Biology 5
History 5
Latin 5
Commercial Geography 4
Typewriting 1
Drawing 1
Music 1

### Second Year.

English 5
Geometry 5
Physiography 5
Agriculture 5
History 5
Latin 5
Bookkeeping 3
Stenography 2
Drawing 1
Music 1

English 5
Geometry 5
Physiography 5
Agriculture 5
History 5
Latin 5
Bookkeeping 3
Stenography 2
Drawing 1
Music 1

## ENGLISH.

### First Year.

Literature. The general purpose of teaching literature in the first year is to arouse an interest in reading, to teach the student how to read more intelligently, and to develop the power of imagination. If these results are to be secured, care must be exercised in the selection of books to be read. First of all, books should be selected for their wholesome interest to boys and girls. They should be chosen also with a view to multiply the student's interests and thus to prepare him to read other books to advantage. The story is always a source of interest. Students not mature enough to appreciate the plot construction or dramatic unity of a fine novel or a great play, always enjoy the lesser stories, and can be interested in prose, or even poetry that is largely narrative.

In each year a list of books for study and reading is arranged in two groups. From the first group in each year four books should be selected for study in class. From the second list four books should be selected for reading outside of school. The pupil should be required to satisfy the teacher that the reading of books out of school is done in an intelligent and appreciative manner.

FOR STUDY.

Whittier, Snow Bound.
Shakespeare, Julius Caesar.
Webster, First Bunker Hill Oration.
Gray, Elegy in a Country Churchyard.
Tennyson, Gareth and Lynette, Lancelot and Elaine, Passing of Arthur.
Dickens, Christmas Carol.
Scott, Marmion.

FOR READING.

Irving, The Sketch Book.
Hawthorne, Tanglewood Tales.
Goldsmith, Vicar of Wakefield.
Franklin, Autobiography.
Warner, Being a Boy.
Gaskell, Cranford.

Lamb, Essays of Elia.
Kipling, Jungle Book No. 2.
Longfellow, Tales of a Wayside Inn.

Composition. The general purpose of teaching composition in the first year is to secure a greater degree of ease and accuracy in the use of the English language. To this end students should write many compositions. Also, much attention should be paid to the development of clearness in oral expression. In this respect constant attention should be given to distinctness of utterance, to pronunciation, inflection and phrasing.

Along with the opportunity for constructive work by the student should be guidance in matters of technique, including capitalization, punctuation, grammatical relations, certain rhetorical principles—unity, coherence and emphasis, sentence and paragraph structure—all these through very simple application at first, but gradually increasing in difficulty.

All tasks assigned should be within the student's mental grasp and definite enough to excite his constructive ambition. If assignments are definite and concrete, the student's interest in composition work will grow and more satisfactory results will be obtained. For this reason, topics drawn from the range of the student's personal observation and activities should serve as a basis for both oral and written work in composition.

The following are recommended as suitable exercises for composition work in the first year:

(a) Letter writing, both business and social, with attention to substance as well as to form.

(b) Short themes, both oral and written, based on the experience of the student and on the literature of the term.

(c) Simple descriptions and narratives, based on the experience of the student and on the literature read. Emphasis should be laid on description.

## Second Year.

Literature. "The general purpose of teaching literature in the second year is to arouse an interest in good books and to develop power to think accurately."

In order to encourage the habit of reading good books, carefully selected lists should be prepared to guide students in supplementary reading. The teacher should assist the student in the

selection of books, and should require written reports and conduct class discussions on books read out of school.

FOR STUDY.

Scott, Lady of the Lake.
Lowell, Vision of Sir Launfal.
George Eliot, Silas Marner.
Lincoln, Gettysburg Address.
Washington, Farewell Address.
Byron, Mazeppa, Prisoner of Chillon.
De Quincey, Joan of Arc and The English Mail Coach.
Shakespeare, Merchant of Venice.

FOR READING.

Hawthorne, Twice Told Tales.
Stevenson, Inland Voyages.
Lamb, Essays of Elia.
Addison, Spectator Papers.
Dickens, Tale of Two Cities.
Scott, Ivanhoe.

Composition. In teaching composition in the second year the aim should be to secure clearness of thought and expression in formal discourse.

The work for the year should be as follows: (a) Short themes, both oral and written, in narration, description, and exposition. Concrete and specific subjects help the pupil to hold himself within definite limits, and encourage clearness of thought and expression. Subjects should also be within the experience of the pupil.

(b) Further study of paragraph structure with respect to unity, coherence, emphasis; the use of the topic sentence; connectives; the methods of transition.

(c) Elementary argumentation, oral and written, based on matters that call for independent thought, and that are likely to be entered into with genuine spirit. In this connection the statement of propositions, the definition of terms, and the parts of an argument—introduction, body, and conclusion—should receive some attention.

(d) Kinds of sentences: long and short, periodic and loose, balanced, rhetorical questions, etc. The principles of variety in sen-

tence structure. Unity, coherence, and emphasis in sentence structure.

Grammar. In teaching grammar in the second year the aim should to secure (1) a thorough understanding of the logical structure of the English sentence; (2) a familiarity with the parts of speech, and with their inflections; (3) a knowledge of the rules of syntax established by good usage.

The work of the semester should consist of a systematic review of the principles of English grammar.

### Third Year.

Literature. The general purpose of teaching literature in the third year is to develop in the student the power to discriminate between various literary types, and to compare their relative values. An effort should be made to stimulate a finer feeling for literature. A good text book in the history of literature should be used as a handbook of reference, and historical study should be made the background for the study of representative classics.

#### FOR STUDY.

Shakespeare, As You Like It.
Arnold, Sohrab and Rustum.
Blackmore, Lorna Doone.
Carlyle, Essay on Burns or
Macaulay, Life of Johnson.
Milton, Lycidas.
Palgrave, Golden Treasury (first series) Book Four, with especial attention to Wordsworth, Keats and Shelley.
Ruskin, Sesame and Lilies.
Thoreau, The Succession of the Forest Trees.
Lincoln, Second Inaugural Address.

#### FOR READING.

Shakespeare, Twelfth Night.
Aldrich, Story of a Bad Boy.
Scott, Quentin Durward.
Dryden, Alexander's Feast.
Goldsmith, She Stoops to Conquer.
Dickens, David Copperfield.

Macaulay, Essay on Lord Clive, or
Essay on Addison.
Burns, Short Poems.

Composition and Rhetoric. The aim in teaching composition and rhetoric in the third year is to train pupils to express their ideas with ease in simple, clear, and correct English. Also some attention should be paid to force. A good modern text-book in rhetoric and composition should be introduced at the beginning of the third year, and should serve as a handbook of reference throughout the remainder of the course.

The work of the year should be as follows:

(a) Short themes of various types.

(b) Narration, both oral and written, based on the experience of the student and on history, biography, simple stories, etc.

(c) Description. The treatment should be made more complete and the material should be adapted to the increased maturity and thought power of the students. In connection with the work in description due consideration should be given to diction, synonyms and antonyms, specific and general terms, and words frequently confused.

(d) Extended exposition and continuous argument with particular reference to the various methods of paragraph development. Also, in this connection, unity, coherence, and emphasis in the paragraph should receive special consideration.

(e) Study of the text, with constant reference to models for illustration.

## Fourth Year.

Literature. The aim in teaching literature in the fourth year should be to lead the student into acquaintance with life as revealed by the master spirits. The ethical bearings of literature taught should always be present in the mind of the teacher, and the lessons therein embodied should be carefully brought out.

### FOR STUDY.

Shakespeare, Macbeth.
Carlyle, Heroes and Hero Worship.
Thackeray, Henry Esmond.
Emerson, Essay on Self Reliance.
Macaulay, Essay on Milton.

Wordsworth. Intimations of Immortality and other short poems.
George Eliot, Romola.
Dickens, Oliver Twist.
Tennyson, Shorter Poems.

FOR READING.

Hawthorne, House of Seven Gables.
Austen, Pride and Prejudice.
Shakespeare, The Tempest.
Pope, Essay on Man.
Lowell, Selected Essays.
Emerson, Essay on Nature.

Composition and Rhetoric. The purpose of teaching composition and rhetoric in the fourth year is to bring the practice of composition into its proper relation, both to the student's experience and every day interests and to his study of good literature. Through this process the student should gain some idea of elegance.

The work of the year should be as follows:

(a) Themes, both short and long, of various types.

(b) A critical study of the formal types of discourse.

(c) A search for illustrations to which the principles of composition may be applied.

(d) A critical study of illustrations, as a help in securing a standard of judgment.

(e) A review of the principles of unity, coherence and emphasis in sentences, paragraphs, and propositions.

## MATHEMATICS.

Three years are given to this subject. The first year to algebra; the second to plane geometry; the first half of the third year to algebra, and the second half to solid geometry.

The work should be made to touch as much as possible the actual life and experience of the student, so that it may not become mere form.

A few definitions and questions may be regarded as essential, and drill in these should be so constant, and the pupils should become so familiar with them, as to make them a part of his general fund of knowledge.

### First Year—Algebra.

In the first half of the year the following ground should be covered: (a) definitions and notation; (b) drill in language of algebra; (c) fundamental operations; (d) simple equations, not involving algebraic fractions, with ample applications to the problems involving them; (e) factoring; (f) fractions, including complex fractions, and ratio and proportion; (g) linear equations, both numerical and literal, containing one or more unknown quantities; (h) problems depending on linear equations; (i) radicals, including the square root of polynomials and of numbers, —exponents, including the fractional and negative exponents.

Definitions and notation should be introduced whenever needed, and teachers should observe that these are placed in textbooks on algebra in separate chapters merely to present an orderly arrangement, and not to indicate the sequence of lessons.

The pupil should be led to realize the need of general terms by referring to his own experience. His attention should be called to the fact that just as integers in arithmetic are not sufficient for all the emergencies of experience, and fractions are introduced, so here positive numbers are not sufficient, and negative numbers must be introduced.

The transition from arithmetic to algebra should be gradual. Statements of arithmetical conditions should be repeatedly made until the truth of the general or algebraic statement is readily appreciated.

### Second Year—Plane Geometry.

Note—It will be observed that the work in geometry is not con-

secutive, but that plane geometry is allotted to the entire second year while solid geometry is assigned to the second half of the third year.

Geometry presents an entirely new field of thought to the student; and, unfortunately, some of its most abstract and difficult concepts occur at or near the beginning of the study. Moreover, some of the early propositions are so nearly axiomatic in their nature as to make their demonstration very difficult to comprehend. Trained mathematical minds have been at work for twenty-five centuries in reducing highly generalized and extensive truths into the most compressed and concisely worded forms of expression.

For all of these reasons the subject offers particular difficulty to the beginner; and requires especial patience. skill, interest and enthusiasm on the part of the teacher. Although endeavoring to secure earnest work from the student, the teacher should not expect from him a too comprehensive grasp of many of the principles met in the early part of the book; he must grow into the meanings and understanding of many of these. If the teacher, however, never becomes discouraged, nor allows the pupil to do so, the later stages of the study present less inherent difficulty and may become a particularly interesting and valuable study.

The ground should be covered as taught in a standard textbook. Do not insist upon too much work in definitions at first, but let the definition grow into the mind with the growth and development of the subject; still, the pupil should not leave the subject without exact and definite ideas of such geometrical concepts as admit of formal definition, and the memorization of the definitions in the very words of the book is the best means to this end. Some slight original work should be given from the first, increasing throughout the year. The student should be encouraged in making applications of geometrical principles outside of the class.

### First Half Third Year—Algebra.

The work of the third year should consist of algebra, one-half year, and of solid geometry, one-half year. Algebra should be given in the first half-year and solid geometry in the second. In algebra the work should include: (a) quadratic equations, both numerical and literal; (b) simple cases of equations with one or more unknown quantities, that can be solved by the methods of

linear or quadratic equations; (c) problems depending on quadratic equations; (d) the binomial theorem for positive integral exponents; (e) the formulas for the nth term and the sum of the terms of arithmetical and geometrical progression, with application.

It is assumed that the pupils will be required throughout the course to solve numerous problems which involve putting questions into equations. Some of these problems should be chosen from mensuration, from physics, and from commercial life. The use of graphical methods and illustrations, particularly in connection with the solution of equations, is also expected.

### Second Half Third Year—Solid Geometry.

The work should cover the amount given in the standard texts. The work should be thorough, definite, and accurate.

## LATIN.

### First Year.

A first book in Latin, completed. For the latter part of the year a text in easy Latin should be used. Throughout the entire year special attention should be given to the following:

(1) Accurate pronunciation.
(2) The inflections.
(3) Acquiring a vocabulary.
(4) Elementary principles of syntax.
(5) The simple rules for composition.
(6) Derivation of words.
(7) The subjunctive.
(8) Relative and conditional sentences.
(9) Indirect discourse.

### Second Year.

Caesar's Gallic War, any four books, preferably the first four. Systematic work in connected prose composition. Frequent review of the work done in the first year.

### Third Year.

Cicero's orations. Any six from the following list: The four orations against Catiline, the Archias, the Manilian Law, Marcellus, Ligarius, Roscius, Milo. Systematic work in connected prose compostion and Latin Grammar.

### Fourth Year.

Virgil's Aeneid I-VI. Systematic work should be given in mythology and scansion and the work in grammar and composition in the second and third years should be carried on throughout the year.

The following books should be in every high school library:

Froude's Caesar.
Trollope's Cicéro.
Sellar's Virgil.
Gayley's Classic Myths.

## MODERN LANGUAGES.

### GERMAN—First Year.

Note.—It will be observed that this program of studies allows scools to provide for a course of three years in this language, and that diploma credit should not be given for courses of less than two years. In schools offering a two years course the work should be identical with the work as given for the first two years of the three year course.

The first year's work in grammar should extend about to syntax. The course should include the following lines of work and be arranged something as follows:

1. Very careful and thorough drill in pronunciation extending throughout the year. Study of the fundamental differences between German and English methods of utterance.

2. Thorough and systematic drill in the inflections of articles; pronouns; strong, weak and mixed nouns; of the strong, weak and mixed verbs, the auxiliaries, modals, etc.; study of the more general rules of gender, the classification of nouns, the formation of the passive voice, the main principles of mode and tense; the various sentence orders. The use of German script should be taught, although it is not necessarily much used.

3. Abundant exercises designed to illustrate the above forms and principles and fix them in memory.

4. Memorizing and frequent repetition of easy colloquial and idiomatic sentences. This is especially important and valuable in giving the student confidence in the use of language and the *feeling* of it.

5. Reading of from 100 to 150 pages of graduated texts.

6. Constant practice in translating into German appropriate sentences based upon all of the work referred to above.

### Second Year.

The work in the second year should include the following:

1. A thorough review of the grammatical principles learned during the first year.

2. The reading of 150 to 200 pages of literature in the form of easy stories, plays, etc., somewhat more difficult in style than those of the first year.

3. Regular work, once a week or oftener, in some text book in German composition.

4. Occasional practice in sight reading.

5. Continuation of work in memorization of idioms, conversational expressions, proverbs and sayings, short poems, etc.

### Third Year.

Much of the work of this year should consist of reviewing and applying the work of the previous two years. The correlation and co-ordination of the more or less isolated and fragmentary knowledge of the student is especially important here, and some comparisons with English grammar may well be made. The object to be reached by the student at the close of this year is a proficiency indicated about as follows: the ability to read at sight German prose and poetry of moderate difficulty; the ability to put into correct German easy English passages; to explain questions relating to ordinary grammatical forms; and to translate and explain, with previous study the more difficult passages ordinarily occurring in German literature.

Texts read and studied should be such as to give the student a sympathetic knowledge of German life, thought, traditions, and ideals.

## FRENCH.

A two year course only is presented in French. It should be given in general largely as indicated in the first two years' work in German. The French accent and pronunciation should be given careful attention, to which end the instructor should pronounce well, and thoroughly understand the formation of the sounds of the language. Thus the pupil may learn both by imitation and by careful instruction in the correct methods of articulation, vocalization, etc.

It is preferable, usually, that the study of French should be preceded by that of Latin. The attention of teachers is called to the report of the Committee of Twelve of the Modern Language Association of America. This is published in book form by D. C. Heath & Co., and contains an extremely valuable discussion of the teaching of French and German.

## HISTORY.

1. Ancient History, one year. A good text in Ancient History completed, with special reference to the history of Greece and Rome.

2. Medieval and Modern History, one year. The completion of a standard text in this subect, beginning with death of Charlemagne (814 A. D.) and extending to the present time.

3. English History, one year. The completion of a standard secondary school text.

4. American History and Civics. In this course it is probably better to use two separate texts.

Special attention should be given to local and state government. Debates on subjects growing out of the class room work, mock trials and elections, etc., will add much to the interest and effectiveness of this course. Some elementary political economy may be introduced with good results.

Throughout all of the above courses in history there should be much supplementary reading and investigation on the part of the pupils. Topics should be assigned and written and oral reports made in class. Abundant use should be made of outline maps, blackboard illustrations and other illustrative material. Oral and written reviews should be frequent.

## PHYSICS.

The course of instruction in physics should include:

a. The study of at least one standard text-book, supplemented by the use of many and varied numerical problems to the end that the student may gain a comprehensive and connected view of the most important facts and laws of elementary physics.

b. Instruction by lecture-table demonstrations to be used mainly as a basis for questioning upon the general principles involved in the student's laboratory investigations.

c. Individual laboratory work. Each student should be required to perform at least thirty-five experiments selected from some approved list. Separate laboratory handbooks are usually published to accompany the regular texts and should be consulted in the individual experiments performed by the student in the laboratory.

Throughout the course the student should be encouraged to do clear, accurate and independent thinking.

Since each experiment should develop some important fact or principle, the student should be encouraged to make his experiments successfully, to record observations in systematic form, and to draw and state his inferences with precision.

The following general suggestions for keeping notebooks are recommended:

"The purpose of each experiment should be clearly stated in a brief title."

"A brief description, usually accompanied by a drawing, should show how the experiment was done. Descriptions should be expressed in definite and complete sentences, and drawings should show the essential parts of the apparatus at the most significant part of the experiment. Drawings should be made in the form of plain outline diagrams and should aim at simple accuracy rather than at artistic finish."

"Descriptions, drawings, observations and numerical data should be confined to the left-hand pages of the notebooks. Statements of reasoning, calculations and conclusions should be written on the right-hand pages of the notebooks. Calculations should be written out in full with intermediate and final results definitely named."

## CHEMISTRY.

The Course in Chemistry should include:

(1) The study of one good textbook with as many supplementary books as he can get.

(2) Lectures by the instructor with table demonstrations to be used mainly as a basis for teaching the general principles of chemistry.

(3) Individual laboratory work requiring thirty to thirty-six double periods of work with proper note book record of exercises and experiments.

(4) The observation and noting of the application of chemical laws and principles to the affairs of every day life and especially to the industries of the student's community and state.

The student's note-book should contain a complete record of the original work done by the student in the laboratory including drawings, descriptions of processes, and phenomena observed. At the end of the term his teacher should sign his notebook certifying to the amount and character of the work done.

The subjects studied with care and with most of which the student will perform exercises and experiments in the laboratory are as follows:

Elements, symbols, atomic weights; oxygen—nature, preparation, properties, uses; hydrogen—nature, preparation, properties, compounds, uses; chlorin—nature, preparation, properties, compounds, uses; Avogadro's hypothesis, density of gases, molecular weights, formulas and equations—arithmetic of chemistry; sodium and potassium—nature, preparation, properties, uses; solution; sodium and K. compounds; sulphur—nature, where found and prep., properties, compounds, uses; sp. gravity, boiling point, laws of combination; nitrogen—nature, where found and prep., properties, compounds, uses; nitrogen groups; halogen groups; carbon; silicon dioxid; calcium compounds; magnesium and zinc; mercury; copper; silver; gold; platinum; aluminum; iron and tin and lead; compounds of carbon.

## Laboratory Work.

In Chemistry, two hour perods, thirty to thirty-six experiments, and notebook containing directions, results and observations.

Experiment 1. With metric and 12 inch ruler note length of 10 cm, 1 cm, size of 1 cc, put 10 cc into bottle, fill test tube, note capacity, etc.

Ex. 2. Weight. Weigh 1 oz. 1 g., weigh 10 g. salt, weigh various small articles.

Ex. 3. Divisibility. Solution of sugar.

Ex. 4. Union of Atoms. 5 g. iron turnings and same bulk powdered sulphur. Use copper instead of iron.

Ex. 5. Heating of metals in air.

Ex. 6. Make ignition tubes.

Ex. 7. To bend glass tubing. To cut glass.

Ex. 8. To obtain oxygen.

Ex. 9. Determination of % O. in air.

Ex. 10. Formation of oxids.

Ex. 11. Electrolysis of water.

Ex. 12. Decomposition of water by sodium.

Ex. 13. Preparation hydrogen.

Ex. 14. Properties hydrogen.

Ex. 15. Preparation chlorin.

Ex. 16. Preparation hydrochloric acid.

Ex. 17. Properties hydrochloric acid.

Ex. 18. Weight of liter O.

Ex. 19. Action of sodium with water.

Ex. 20. Flame tests—nitrates of lithium, sodium, calcium, etc.

Ex. 21. Solvay process.

Ex. 22. Weight of water of crystallization.

Ex. 23. Heat sulphur.

Ex. 24. Prep. and properties hydrogen sulphid.

Ex. 25. Prep. sulphur dioxid.

Ex. 26. Properties of sulphur dioxid.

Ex. 27. Prep. ammonia.

Ex. 28. Properties of ammonia.

Ex. 29. Test for nitric acid.

Ex. 30. Prep. nitric acid

Ex. 31. Properties nitric acid.

Ex. 32. Study of bromin.

Ex. 33. Study of iodin.

Ex. 34. Sulphuric acid on potassium iodid.

Ex. 35. Preparation carbon dioxid.

Ex. 36. Properties carbon dioxid.

Ex. 37. Four ways prep. salts.

Ex. 38. Action of metals on salt solutions.

Ex. 39. Chemical equivalent by displacement.

Ex. 40. Mordants and dyeing.
Ex. 41. Ferric to ferrous chlorid.
Ex. 42. Silver salts in photography.
Ex 43. Blue printing.
Ex. 44. Fermentation.
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Ex. 46. Atomic weights.
Ex. 47. Valence, radicals.
Ex. 48. Phosphorus—preparation of and of phosphates.
Ex. 49. Gunpowder.
Ex. 50. Chemistry of life.

## BIOLOGY—One Year.

Biology deals wholly with living organisms. It includes elementary botany, zoology, and human physiology and hygiene. The subjects are sufficiently closely related to afford a connected study for a year of desirable work. The aim of biology is to give pupils a general view of the wide range of forms in plant and animal life, to lead them to observe the many processes carried on by plants and animals and to study only so much of the structure as is necessary to understand clearly such processes, and to help the pupils to a reasonable knowledge of the human body and the way to care for it.

Biology should be pursued strictly as an inductive science. The subject matter should be present to the senses. Field work, laboratory work and actual study of specimens must be relied upon. Textbook study alone of plants and animals is a waste of time and energy of both pupil and teacher. Textbooks should be used to guide and supplement field and laboratory study. If the teacher is not very well prepared to present the subject let him at least become a learner and together with the pupils pursue the subject as learners. In this way much may be accomplished; in fact, very often the best learning and teaching will result.

The study of biology should begin with some simple physical and chemical experiments to give clear, concrete notions of the principal elements and simpler compounds of plant and animal life. These experiments should be performed as an introduction to the various topics to which they are most closely related. The order of study should be plant life, animal life, human physiology

and hygiene. No outline of the subject by topics will be given here as any good textbook will furnish a desirable order for developing the subject. The following books are suggested as texts or guides to direct the study:

Bailey & Coleman, First Course in Biology.
Hunter, Elements of Biology.
Hargitt, Outlines of Biology.
Boyer, Elementary Biology.
Randolph, Laboratory Direction in General Biology.

## ADVANCED BOTANY—One Year.

Advanced botany is open only to students who have had biology. Botany should be taken at least by all those who in the fourth year expect to study agriculture.

It is not difficult for a school to provide for a unit of botany in its program. The material for study is accessible and easy to handle and care for. Its education value is high when properly taught. It affords a wide range of interests and valuable knowledge for every boy and girl when the economic side is adequately emphasized.

The study should represent laboratory and field work, demonstrations and textbooks. A note book in which accurate drawings and precise language are found should be kept by each student. The note book should contain illustrations and descriptions of the main topics under anatomy and morphology and physiology and selected types under plant groups given below. The drawings should be made from the specimens and carefully labeled.

The range of the study may be indicated by the following topics:

I. Anatomy and morphology—the seed, the shoot, the stem, root, flower, fruit, cell.

II. Physiology—the role of water in plants, photosynthesis, respiration, digestion, irritability, growth, fertilization.

III. Ecology—modification of parts, dissemination, cross-pollination, plant societies.

IV. Plant groups—algae, fungi, lichens, bryophites, pteridophites, gymnosperms, angiosperms.

## ADVANCED ZOOLOGY—One Year.

Only students who have had biology are eligible for advanced

zoology. The work should represent laboratory exercises, demonstrations, and the use of textbooks. The note book kept by the student should contain accurate drawings. The outline drawings of a protozoan, a coelenterate, an annelid, a decapod crustacean and a vertebrate should be carefully labeled to show external and internal structure. There should also be labeled drawings showing external structure of an insect, mollusk, and vertebrate of another kind from the one referred to above.

The study should include general natural history, life histories, geographical range, relations to other animals and plants, and economic relations of the common invertebrates and vertebrates found in the locality of the school. Such types as the following are suggested: mammal, bird, lizard, snake, frog, bony fish, snail, spider, starfish, etc.

The work in zoology should also include the classification of animals, the general plan of internal structure of a few types, the general physiology, the general features of reproduction, and some of the more prominent evidences of relationship within such groups as decapods, insects, vertebrates.

## DOMESTIC SCIENCE AND ART—One Year.

The time given to domestic science and art should be about equally divided between the two subjects. There should be a minimum of about eight hours per week and should count for five hours credit. The following topics are suggested:

Domestic Science—laundry work, waitress work, chemistry of foods and science of cooking, foods and digestion, invalid cooking, home nursing, sanitation, planning, purchasing, preparing and serving meals, etc.

Domestic Art—making simple articles of dress and household supplies, pattern drafting, sampler making, embroidery, millinery, room decoration and use of furniture, etc.

## PHYSIOGRAPHY.

This course covers one year's work; one-half year in physical geography and one half year in elementary geology. Unless the teacher has had an extended course in this branch and its cognate subjects the work should follow rather closely the presentation given in some good modern text-book. The text-book work, how-

ever, should not be followed to the exclusion of laboratory work, field work, and reference reading.

Laboratory Work. Some such manual as Brigham's published by Appleton & Co., or Darlin's, published by Atkinson, Mentzer & Grover, should be used. Note books should be prepared with the same care that is used in other sciences.

Field Work. This naturally varies largely with the locality, but will comprise such topics as the following: the clouds and their movements, winds, etc.; weathering of rocks, erosion, transportation and deposition; river currents and movements of water; rocks, minerals, folding, faults, stratification, evidences of movements of the crust, etc. Coal mines, quarries etc., should be visited.

Reference Reading. Pupils should be given reference readings in other text-books. In cases where material in proper form can be secured, reading in allied sciences may be given. Government publications afford a considerable amount of collateral reading, especially those from the Geological Survey and the Department of Agriculture, Washington. The National Geographic Magazine, published by the National Geographic Society at Washington is valuable. The American Book Co. publishes a series of physiographic monographs by various authors.

## MANUAL TRAINING—One Year.

Manual training, domestic science and art can only be suggested in rough outlines at present. The theory and practice of the subject are not sufficiently definite and prescribed to admit of more than tentative outlines here. This should not discourage any school, for the subject is of such importance and educational value as to warrant experimenting, even where conditions are not very favorable. In general the rougher operations and processes should precede and those of greater delicacy should follow. The subjects should be developed as any other subjects from the simpler to the more complex processes, and it should be borne in mind that skill in performing without insight and understanding is not educative. The practice should be preceded by clear ideas and illuminate the theory. Free hand and mechanical drawing should be correlated with manual training and domestic art. The following topics are suggested for study:

Joinery, cabinet work, carving, turning, forging, pattern making, machine tool work, bench and shop work, etc.

## FREEHAND DRAWING.

One hour a week for the entire period of four years is required in this course. The following outline is merely suggestive.

1. Representation, (a) color, (b) mass, (c) line: Purpose,—(a) Better acquaintance with nature. (b) Conception of things as wholes. (c) Ability to see proportion.

2. Method,—(a) Silhouettes—landscape, figure, still life. (b) Two-tone drawings from cast. (c) Details from nature—trees, plants, still life, figure.

3. Media,—charcoal, water coloring wash, pencil.

4. Related to other subjects,—botany, study of plants.

5. Related to industry,—bookmaking, illustrations, textiles.

## CONSTRUCTIVE DESIGNING AND MECHANICAL DRAWING—One Year.

The work in designing and mechanical drawing should be continuous throughout the last two years of the high school course. Free hand drawing in the preceding years is a prerequisite. There should be three recitations per week, which should represent about five hours of work per week.

The drawings should be made on drawing paper 8x10, and properly fill the page with not more than two drawings on a page. The drawings may be in pencil, crayon, charcoal, pen and ink, or water colors. There should be free hand drawings guided by the eye and hand alone and instrumental drawings guided by mechanical means. The work should include:

I. Designing and ornamentation,—(a) color, (b) mass, (c) line.

1. Purpose,—(a) Appreciation of beauty in spacing line, tone, and base. (b) Cultivation of sense of fitness with reference to material and use of object. (c) Skill in combining colors. (d) To give definite concepts and names for them. (e) To give experience in the use of pigments.

2. Method,—(a) Play with pure pigment. (b) Study of hue, value of intensity. (c) Color nomenclature. (d) Analysis of color.

3. Relation to other subjects.—Pottery—working designs; Woodworking—working designs; Metal working—working designs; Leatherworking; Physics,—spectrum.

4. Relation to industry,—(a) Architecture, (b) Furniture making, (c) Use of metal, (d) Leather, (e) Tiling.

II. Constructive drawing, including lettering, geometrical constructions, projection lines, projection of plane surfaces, projection of regular solids, projection of regular solids turned at the various angles and truncated, intersection of regular solids, development of surfaces of regular solids and truncated solids, development of screw, thread, standard bolts and nuts, pulleys, etc.

## COMMERCIAL BRANCHES.

### General Suggestions.

It should never be forgotten that the aim of these courses is practical and useful. The public schools can and should turn out better bookkeepers and stenographers than those now coming from the private schools. If this is to be done, however, the instruction must be of a very high class,—always clear, definite, and exact. It should result in a ready and usable knowledge; and the immediate and useful phases of the subjects taught should never be sacrificed to the more remote phases, or those of less certain value. Bookkeeping should make a boy able to do the actual work of keeping books, and typewriting and stenography should make the students quick, careful, and accurate in those arts.

### Commercial Arithmetic.

Instruction in this subject is assigned to the first half of the first year.

It should begin with a thorough review of notation and numeration, addition, subtraction, multiplication, and division, in the latter four of which extensive drills are to be given with a view to securing a high degree of accuracy and rapidity. Teach the addition of two columns at once. Give a careful review of fractions, in which the aim is not so much to secure the ability to manipulate long and complex fractions as it is to get a thorough understanding and a high proficiency in the matter of the use of simple ones. Cover the subjects of decimals, percentage and its applications, measurements, etc., very thoroughly, but with reference only to such forms and processes as are in actual use at present in modern business and commerce. In interest and other applications of percentage, wherever possible, have students draw up notes, drafts, checks, and other current forms, and base problems upon these. Problems relating to local industries and conditions are useful for the purpose of stimulating interest and of making the work more valuable. Do not hesitate to minimize the amount of attention given to obsolete or unusual topics and forms, as for example, days of grace in interest transactions.

### Commercial Geography.

This subject is assigned to the second half of the first year. Vi-

tality and interest should be given to instruction by connecting it as much as possible with the actual life of the community. Show where the coal, gas, oil, lumber, or other products of your vicinity find their markets, and what comes back in return. Study especially the trade routes by which these reach their markets, and the means of transportation in their relation to our state industries. In every possible instance give the work some local bearing or relation.

Secure the best modern texts for reference and class use. Much valuable material can be found in reports of the state and national governmental departments, the reports of various boards of trade, magazine articles, and similar sources. Pupils should do some supplementary reading under the direction of the instructor.

### Typewriting.

The lessons in this subject should follow a very definite and carefully planned system, as given in text-books, or in the series of lessons prepared by some of the type-writer companies. The touch system, so-called, should be used. The three principal varieties of machines in common use are the double key-board, the shift-key visible, and the shift-key invisible. Practice should be given on all of these if possible; and a good plan would be to have about half of the equipment to consist of the shift-key visible machines and the remaining one-half to be made up of the other two styles in about equal numbers.

### First Year.

From the first use of the machine insist upon neat and accurate work. During this year discourage all attempts at speed, but let the whole attention be given to securing accuracy and good form. No pupil should be allowed to take a lesson in advance until the preceding lesson has been prepared absolutely without error and in perfect form. During this year the pupil should not be allowed to use, or even keep, an eraser, but should re-copy all lessons in which errors have been made. The teacher will find the system of grading issued by the U. S. Civil Service Commission in the pamphlet of Instructions to Stenographers quite useful.

### Second Year.

After the student has mastered the mechanical features of the

work adn gained a fair proficiency in the use of the machine in regard to neatness and good form he may take up special instruction and exercises along the following lines:

Duplicating and manifolding.

Erasures.

Tabulating and the making out of bills and other commercial forms.

Legal forms.

Programs, tables of contents, etc.

Specifications, testimony, etc., with covers and titles.

Forms too long for the carriage.

Addresses in various forms.

Letters, and miscellaneous work of various kinds.

During this year some attention may be given to the matter of speed, but never at the sacrifice of accuracy or neatness. Letters from officials, business houses, etc., should be given the class or secured by its members for imitation or criticism.

Throughout the whole course each student should be required to attend to the matter of keeping the typewriter in good mechanical condition. Visiting agents will sometimes give informal lectures and demonstrations which will aid in this direction.

## Bookkeeping.

Any deficiency in the pupil's knowledge of the essential parts of arithmetic, or in his proficiency in its essential processes, that may become evident during this course should be remedied by appropriate reviews and drills. Some work in rapid calculating may well be made a regular part of the study. In the earlier part of the work errors should be ruled out with red ink and corrections interlined, instead of allowing erasures. Subsequently, off-setting and correcting entries should be used for this purpose. The legal status of the various books used should be taught, with the facts relating to the effect erasures or other faults might have in case the books were involved in some case at law. In cases where the instruction is largely individual and follows some of the so-called "budget systems" the teacher should give oral tests and quizzes frequently to test the work. In all transactions, in making out business forms, etc., the student should be required to use the same absolute honesty and accuracy that he will be expected to observe in actual business life.

## First Year.

The object of this year's work is to increase the pupil's knowledge of business forms, papers, and practices; to increase his proficiency in essential arithmetical calculations; and to instruct him in the science and the art of recording simple business transactions in approved forms, and to prepare the statements or balance sheets that show the results of these things.

Calculations. As much drill as seems necessary upon the elementary processes of addition, subtraction, etc.; practical measurements; fractions; the various kinds of discounts; interest; commission; partnership; etc. The pupil by this time should understand the principles involved in these topics, and the drills given should be towards securing rapidity and accuracy in his calculations.

Business Forms. Practice designed to secure complete familiarity with such forms as notes, bills, statements, account sales, telegrams, receipts, due-bills and credit memoranda, checks, endorsements, etc. Students should be able to write many of these upon blank paper.

Account-keeping. Practice in opening and closing simple sets of transactions in both single and double entry, in changing from one system to the other, with an understanding of the chief differences between the two systems. The pupil should be intimately acquainted with the forms and uses of the following books, and should be able to make the standard rulings for them on blank paper:

Journal-daybook.
Cash book.
Sales book.
Invoice book.
Ledger.
Balance sheet book.
Bank pass book.
Notes book.
Check book.

Students should be able to make off trial balances, statements of resources and liabilities, of losses and gains, etc.

## Second Year.

In larger high schools, with more specialized courses, a second year's work in this branch might continue the work of the previous year as follows:

A somewhat higher degree of technical knowledge and skill will be acquired and some specialized forms of bookkeeping may be ad-

vantageously studied, such as those kinds of business requiring peculiar systems of ruling in the books used. Some of these might be as follows: Commission business, requiring sales and cash book with extra columns, consignment ledger, shipment ledger, main ledger, etc. Some attention may be given to loose leaf ledgers, card ledgers, etc. Later in the year if time be available some instruction may be given in corporation and bank accounting.

### Stenography.

#### First Year.

Too much stress can not be laid on correctness and uniformity. No attempt should be made at first to secure speed. If classes are large, use may be made of the blackboard to advantage, and notes of pupils should be uniform enough to allow exchanges of papers to be made among pupils for purposes of study, criticism, and correction. From the first the proper amount of dictation should be given. Continual and constant review and drill should be given. Sight reading and other devices should be used to arouse and maintain interest. It is not advisable to correlate work in typewriting and stenography during the first year. Constant reference to the printed form of symbols should be made, as by trusting to memory incorrect forms may get fixed in the mind.

#### Second Year.

In schools with sufficient equipment and means for elaborate and highly specialized courses a second year's work may be given. Begin with a careful review of the manual. Then begin a carefully graded reader in the system used. Base work upon this, for copying, blackboard work, etc. After the completion of the work in the reader a carefully edited dictation text may be taken up. Attention may gradually be given to the matter of speed, and by the end of the year an average of a hundred words a minute on matter of moderate difficulty may be expected.

### Commercial Law.

A term in this subject is offered during the last year. Some good

elementary text-book should be followed, and attention in general should be concentrated in a definite way upon the practical and useful aspects of the subject. Lectures of a rather informal sort by representative attorneys of the community may often be secured and will add to the value and interest of the work.

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## EXCERPTS FROM THE SCHOOL LAW.

Sec. 79. It shall be the duty of the state superintendent of free schools to prepare and distribute a manual containing the courses of study prescribed by the committee on course of study and such other matter as may seem necessary to enable teachers to carry out the said courses of study, and his further duty to see that the teachers in all the various schools follow the course of study so prescribed; he shall also provide for the examination and graduation of pupils who satisfactorily complete the said course of study, and shall issue diplomas thereto.

Sec. 131. The state board of education shall perform the duties heretofore performed by the state board of examiners as herein provided, and in addition thereto, they shall constitute a committee on course of study and as such committee, shall prescribe a course of study for the public schools of the state, including the district schools, and define the relations that each shall bear to the others.

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